COMPUTERWORLD

THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY

Weekly Newspaper

Second-class postage paid at Boston, Mass., and additional mailing offices

ar July 18, 1973 Vol. VII, No. 29

NEWSPAPER

NEWS IN BRIEF

Judge to Rule on IBM's 'Alleged' Contempt

NEW YORK – Judge David Edelstein has scheduled a hearing for this week (July 16) on damages to be assessed against IBM for its "alleged" contempt of court for its refusal to turn over documents to the Justice Department.

Edelstein, in slating the meeting, said "it appears" that IBM has not complied with the order he issued requiring it to turn over the contested documents and that IBM has not challenged the facts of the case.

Noting that the Supreme Court and the Circuit Court of Appeals had both upheld his order, Edelstein said this week's hearing should be limited "to the issue of the fine and damages to be assessed against the defendant for its alleged contempt."

L.A. Facilities Management Plan to Get Further Study

CW West Coast Bureau

SANTA ANA, Calif. – A negotiating team for the Orange County supervisors has recommended that the county accept a $26 million proposal for facilities management, but action has been delayed until July 31 for further study.

Protests from citizens attending the meeting prompted the supervisors to vote 3-2 in favor of the delay and to reconvene a special blue-ribbon committee which had earlier discussed the feasibility of facilities management for county data processing.

The team recommended the county negotiate with Computer Sciences Corp. for facilities management, having evaluated its proposal for seven years' work at $26 million, and that of Electronic Data Services at $41 million.

The supervisors had previously requested bids for new hardware to replace RCA-built equipment, but turned instead to the facilities management concept [CW, July 11].

On the Inside This Week

New S/3 Is Bigger And Multiprograms

Software Boosts Model 15

By Michael Weinstein
Of the CW Staff

WHITE PLAINS, N.Y. – In answer to the recurring question of where will the System/3 user go when he outgrows his present system, IBM has announced the System/3 Model 15 with more main memory, more disk space and a communications and multiprocessing capability.

The new computer is built around the architecture of the current S/3 models, and retains the 1.52 μsec processor cycle time. On the software side the Model 15 uses the same basic instructions and programming languages (RPG II, Fortran, Cobol).

The Model 15 departs from older offerings in size and the ability to multiprogram.

Main memory is up to 131K bytes (compared with 48K bytes for the Model 10) and disk storage is up to 91.7M bytes (compared with the Model 10's capacity of 51.4M bytes).

Typical monthly rental ranges from $3,240 to $7,127, with purchase prices from $136,575 to $298,480.

The multiprogramming techniques are designed to offset a common complaint with the existing S/3 models that no true multiprogramming capability exists.

With these older models, IBM offered the Dual Programming Feature under which core is divided into a maximum of two partitions, each with a unique set of hardware registers, but many S/3 users felt this approach was inadequate.

The IBM System/3 Model 15 features an operator console with both display and keyboard capabilities for easy communications and simple inquiry.

The Model 15 offers an improved multiprogramming operation using two-level multiprogramming technique.

Under this method, main memory can be divided into foreground and background partitions.

The key to running a multiprogram load is the use of the Communications Control Program (CCP) in a supervisory state in the foreground partition. The CCP can further subdivide the foreground portion into smaller segments (no smaller than 2K bytes and no larger than 32K bytes).

Through these smaller subpartitions users can run multijob streams by spooling punched card I/O and other processor operations on a swapping basis.

(Continued on Page 6)

VS on 360? Yes... With Reservations

"If a 370 operating system is to be used to support S/360, then the user [should be] given some assurance that he will not be programmed into a corner."

By Ronald A. Frank
Of the CW Staff

WASHINGTON, D.C. – A virtual storage capability could be added to the IBM System 360 line by independent suppliers but such a move could result in system degradation. In addition, 360 VS might not be desirable to users.

These conclusions and others are contained in a detailed study prepared by Compata, Inc., a consulting firm, outlining specific methods to implement a virtual storage capability on 360 mainframes.

Prepared for the Computer Lessors Association, Inc. (CLA) and released by CLA, the report suggested that any virtual implementation on the 360 line would have "to cope with future IBM changes in System 370 architecture." The user will have to be given some assurance that the virtual capability will be transferable to other systems later on, the report said.

"If a 370 operating system is to be used to support S/360, then the user [should be] given some assurance that he will not be programmed into a corner," the Compata study said.

The Compata study called the addition of virtual storage to the 360 Series a "perishable concept." It further said that current 360 users have not conclusively indicated they are interested in add-on virtual capabilities for their machines.

Among the firms reportedly considering the addition of virtual features to the 360, Compata listed Computer Hardware Consultants and Services (CHCS), Comma Corp., Electronic Memories and Magnetics, Corp., Fabri-Tek, Inc. and Fair-

(Continued on Page 4)

Researcher Says Simplify and...

Don't Overdo DP Security

By Mike Merritt
Special to Computerworld

MENLO PARK, Calif. – In the rush to protect themselves from computer theft many companies – and banks in particular – have spent a lot of money foolishly, according to Donn B. Parker, one of the leading researchers into computer-assisted crime.

Parker cited the purchase of $25,000 magnetometers as one example of this attitude. He said the reports of destruction of data on tapes or by pocket magnets have never been confirmed, and that research has shown that to erase a tape or disk would require a very strong, large magnet placed very close to the recording surface.

"You could actually do much more harm by scratching a disk or using a Zippo on a tape," Parker noted. Yet he said he has seen high-priced magnetometers located at the entrances to several new computer rooms – generally disconnected.

The tests Parker referred to were conducted at the Stanford Research Institute where Parker is engineering an extensive study of computer abuse.

Wretched Excess

The researcher mentioned another foolish excess. A bank opened a new computer center and equipped it with a "mantrap door," a double-door system with a small anteroom between – big enough for just one person. A guard inside the center could observe the anteroom with a TV camera, and the floor of the anteroom was fitted with an automatic weighing device to make sure only

(Continued on Page 2)

Women Programmers a Predictable Sort

By a CW Staff Writer

NEW YORK – Women, it seems, are a lot more predictable than men, or so a Brooklyn College professor found when he put a new programming aptitude test on a trial run.

Dr. Jack M. Wolfe of the department of information science at Brooklyn College, the City University of New York, compared students' marks on his aptitude test with the actual grades they earned in a programming course.

The 103 women tested in seven community colleges turned out to be much more predictable performers than the men, he said. The correlation between the women's aptitude test scores and their actual grades in programming was a high positive 0.70. The 192 men tested in the same schools had a lower coefficient of positive 0.45.

These results corroborate the results of other studies which show that aptitude tests and course grades correlate more highly for women than for men students, Wolfe stated.

(Continued on Page 2)

IBM Expands Main Memory On Some 370s

WHITE PLAINS, N.Y. – IBM has approximately doubled the amount of main memory it will supply to users of System 370 models 115, 125 and 135.

Despite the fact that memories are logically doubled, physical size has been controlled so the new memories can be installed incrementally at the user's location in the same frames that house the smaller storage sizes.

In conjunction with the larger memories, IBM also announced a 1052 printer-keyboard compatibility feature for the Model 115 and gave the 3203 printer the ability to print characters recognizable by an optical character reader.

	Model 115	Model 125	Model 135
Current Maximum Memory Size (characters)	98,304	131,072	245,760
New Memory Sizes (characters)	131,072 163,840	163,840 196,608 262,144	262,144 327,680 393,216 524,288
CPU Purchase Price (new memory sizes)	$162,300 and $172,000	$251,000 to $280,100	$415,000 to $535,000
CPU Monthly Rental or Term Lease (new memory sizes)	$3,345 and $3,545	$5,175 to $5,775	$8,670 to $11,170

New Memory Sizes and Prices

The stated purpose of the 1052 printer-keyboard compatibility feature is to enable the 115 to operate as a stand-alone remote job entry workstation communicating with a host computer.

Customer shipments of the models 115 and 135 with the new main memory sizes are scheduled to begin in June and March 1974, respectively. Shipments of new memory increments to upgrade existing models 115 and 135 are scheduled to begin in October and March 1974, respectively.

First shipments of the Model 125 with 160K and 192K characters of main memory will start in December 1973 and shipments of these new memory increments to upgrade existing models will begin in April 1974.

First shipments of Model 125 with 256K characters of main memory and that memory increment to upgrade existing models will begin in April and August 1974, respectively.

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Second-class postage paid at Boston, Mass., and additional mailing offices. Published weekly (except: a single combined issue for the last week in December and the first week in January) by Computerworld, Inc., 797 Washington St., Newton, Mass. 02160.

25 cents a copy; $9 a year in the U.S.; $10 a year in Canada; all other foreign, $25 a year. MARGARET PHELAN, *circulation manager.* Four weeks' notice required for change of address. Address all subscription correspondence to circulation manager, Computerworld, 797 Washington St., Newton, Mass. 02160. w

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Church Financial Service Does Episcopal Parish Bookkeeping Free

BOSTON – A centralized financial service here enables Episcopal parishes to have their bookkeeping and financial reports done free, without having ro rely on skilled volunteer help.

The Church Financial Service, Inc. uses a Honeywell H-58 computer to handle the checking account deposits and withdrawals of member churches. Since much of the total balance can be set aside in a savings account, interest from this "concentration account banking" pays for the entire service.

When a parish joins CFS, it continues to deposit its receipts in a local checking account as before, but the parish treasurer calls the central bank which transfers the deposit to the central fund.

The parish keeps an initially established small balance at the local bank to cover petty cash needs.

In using the service, the parish treasurer makes a detailed record of each deposit and forwards it to CFS for recording.

To pay a bill, the treasurer completes and signs a voucher check form which he also forwards for recording.

The computer keeps the books, and on a 24-hour notice can print out the parish balance and an up-to-the-minute record of all its accounts.

The parish treasurer keeps copies of the deposit forms and voucher forms for his own records, which are now backed up by the service.

The idea for CFS originally came out of the diocese's committee on economy and stewardship. Mostly the members of the committee plus one outside consultant came up with the system.

About 45 of the 183 parishes in the diocese have already signed up for the service that began a year ago with 20 parishes that shared a bookkeeping service.

The Rev. Richard S. Armstrong, CFS executive director, who also does some programming, said the service will be extended to other Episcopal dioceses and to other denominations in June of 1974.

A part-time programmer, a CPA consultant and th.ee secretaries round out the service's staff.

Church Financial Services is at 1 Joy St., 02108.

Simplicity May Offer Best Security for DPers

(Continued from Page 1)

one person at a time was in it.

"The first day they opened up," Parker said, "they had a line of people stretching around the block waiting to get in."

Fortresses Wrong

This is going about things the wrong way, Parker claims. Users should not build fortresses to guard a small volume of sensitive data, but should tailor their protection devices and techniques to their actual needs.

Computer system manufacturers are developing more secure access systems, he said, but data system managers can go a long way toward protecting themselves just by using good personnel policies.

Good background checks on the character of DP personnel, rotation of duties, and not permitting programmers to operate systems or operators to program were three simple solutions mentioned by Parker, who feels most complex computer crimes are inside jobs.

The computer industry is also overlooking another cheap and simple device to protect data and programs, Parker said. Most files have no indication within them that they are private property, and a simple comment in a file that it is proprietary and may not be copied without permission can both deter theft and make it easier to prove theft if it does happen.

Parker said he had inspected the form contracts of a few time-sharing bureaus, and only one – that of National CSS – expressly stated that its own files and those of customers were off limits.

GE's contract said charges would be made for use of some programs, but others that Parker looked at made no reference to privacy at all. So, from the contract at least, it would appear entirely proper for a time-sharing bureau's customer to alter the company's accounting file, wipe out his own account and use the service for free.

No Honor Among Programmers?

The reported cases of computer theft and abuse, Parker said, probably constitute only a miniscule fraction of the total amount going on. Entering a competitor's computer and copying his files appears to be common practice at time-sharing bureaus, and the level of moral awareness among programmers – in respect to beating the system – seems to be very low, Parker claimed.

He suggested several possible reasons for this. Programmers are expected and encouraged to take up challenges, and beating a protected operating system is one such challenge.

He has talked to managers of data processing at eight to 10 universities, for example, who all reported cases of students successfully outwitting operating systems to gain free computer time. But there is little or no punishment for this activity, Parker said, and successful students are sometimes even rewarded with jobs in the computer center.

He said he knows of no university that includes instruction in professional ethics in its computer sciences curriculum, and suggested that such instruction might be a start in improving the moral level of the industry.

Nobody knows how much improper system penetration goes on, Parker said. One reason is that it may not be illegal. If a programmer legitimately buys time on a competitor's system and then breaks through and copies programs, he may not be punishable in many states if the files are not labeled as secret, private or proprietary.

Onus on Victim?

Without specific labeling, the victim has to prove in court that privacy should be implied from such things as unlisted phone numbers, secret account numbers and file names and confidential passwords.

The problem is compounded by state laws that were not written with computers in mind; such old laws may not be broad enough to cover theft of a file.

So another need for adequate protection against computer abuse is an updated code of laws designed to regulate these activities. But even this may not be enough.

Parker mentioned a case of file theft in Colorado where the trial judge dismissed the action because he felt he, and the attorneys in the case, and the jury simply didn't know enough about data processing to be able to understand what was going on. The action was settled out of court, Parker said.

Don't Go to Court

Because of all these problems, Parker said he advises those who have caught computer criminals not to go to court, because the time, energy and cost of prosecuting such a case outweigh any value from winning. Further, he added, a company's reputation can be badly hurt in a court case.

Parker believes the vast majority of these cases is settled quietly and never actually prosecuted. As a result it is very hard to get a handle on the amount of actual computer-assisted crime.

Computer crimes are almost never detected by normal surveillance and checking procedures, Parker's research shows. They come to light accidentally, when the criminal makes a mistake or gets too greedy, or when an extraneous event, such as a computer crash or changeover, reveals the crime.

Just about all a manager can do, then, seems to be to try to prevent computer abuse, and do his best to use computer auditing procedures that might reveal theft.

Justice Reviewing NCIC Privacy Bill

WASHINGTON, D.C. – Attorney General Elliot Richardson last week indicated the Department of Justice is reviewing proposed new legislation to ensure privacy and confidentiality of the individual records in the FBI's National Crime Information Center (NCIC).

In a letter to Gov. Francis Sargent of Massachusetts, Richardson said "appropriate operational and legislative safeguards have and will continue to be instituted as necessary to guarantee the integrity" of the NCIC.

Richardson was responding to a letter from Gov. Sargent [CW, July 11] expressing concern that the NCIC did not have adequate protection for the privacy of individuals.

Richardson did not elaborate on the new legislation but indicated it would provide more safeguards.

Women No Mystery...

(Continued from Page 1)

This means, Wolfe said, that after one of his aptitude tests it is 99.9% certain that the women's performance in programming courses can be more accurately predicted than the men's.

Wolfe pointed out that he designed his test to measure programming aptitude and it should not be used to select students for tab operator or computer operator training.

Programming Aptitude

The Wolfe Programming Aptitude Test School Edition Experimental Form A is available in self-scoring form to a limited number of colleges, supervisors, instructors or counselors who would like to participate in its validation study.

Wolfe is at Brooklyn College, Brooklyn, N.Y. 11210.

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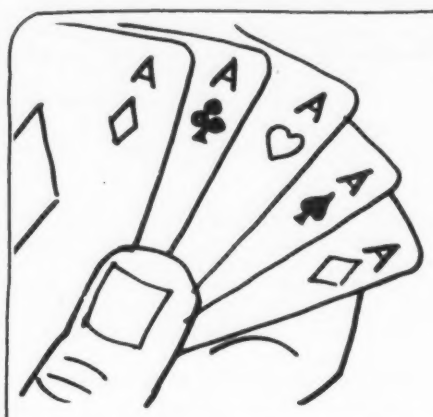
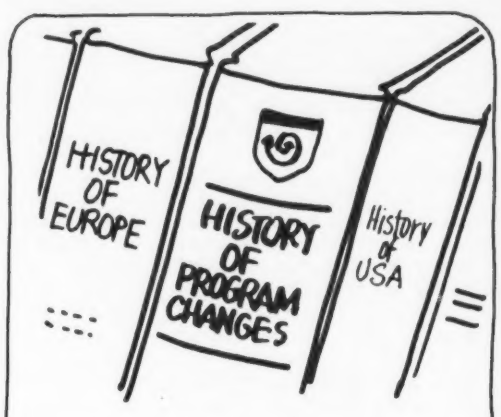
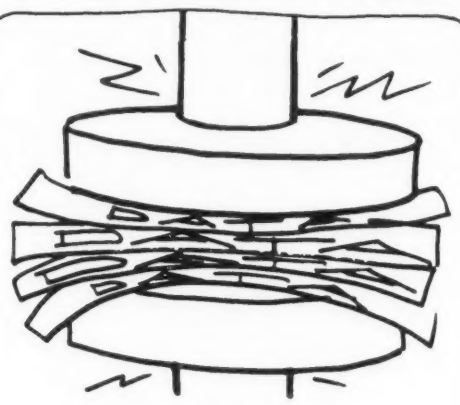


Eliminates card-handling hazards and provides automatic back-up facilities.



Permits storing a permanent history of program changes.



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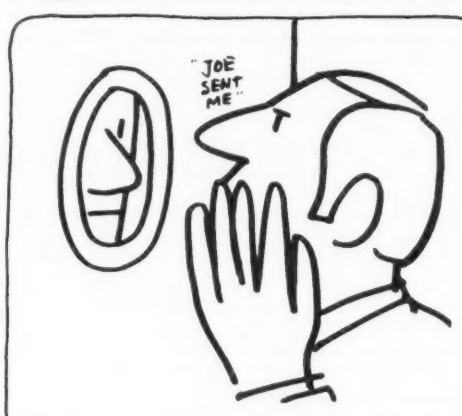

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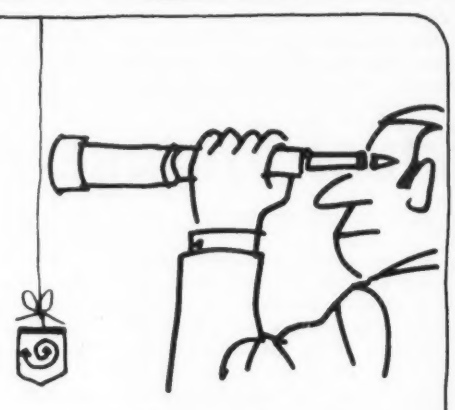

Permits string scanning and/or replacement.

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A Tool to Raise Productivity

Knowledge Workshops Are His Hope

By Mike Merritt
Special to Computerworld

MENLO PARK, Calif. – To Douglas Engelbart computers may eventually change man's ways of working almost as much as the stone axe or the wheel. But the main difference is that data processing can vastly extend man's mental powers, rather than his physical capabilities.

Engelbart is an engineer with the Stanford Research Institute, and for the last 20 years he has been working on the development of the computer as a tool for manipulating abstract information. At SRI he and his coworkers have created "knowledge workshops" to start making this idea come alive.

The knowledge workshop presently depends on time-shared computers. The purpose of the workshop is to increase the ease with which "knowledge workers" can write reports or programs, create and use files, abstract information into graphs and manipulate mathematical symbols.

Office Automation

In some ways the purpose of the workshop is simply to automate an office, to bring a computer to bear on all the data-handling tasks that occur in the work of someone using his mind.

The physical part of the workshop is a CRT-keyboard terminal with a "mouse" and a five-key pad that generates digital signals to replicate the keyboard code. The terminal is connected to SRI's PDP-10, which in turn is part of the Advanced Research Projects Agency network (Arpanet). When all the links are up, then it will be possible for a workshop user to access all the capabilities of the Illiac-IV, a few Burroughs 6700s and IBM 360/90s, and Star, perhaps, and a flock of other machines.

The purpose of all this power is to increase the productivity of the knowledge worker – the programmer, the scientist, the manager and their colleagues.

Englebart said that early in his career he felt that man had reached the saturation point as far as the size and complexity of a problem one person or team could handle; further complexity actually decreased productivity. The knowledge workshop is intended as a tool to increase mental strength by providing the means to alter the ways data can be assimilated.

The rack to the right of the operator's console is the IMP (Interface Message Processor) that connects the PDP-10 with the Arpa network.

A radar screen is a rudimentary example of this function, Englebart said. It would be almost impossible to deal with the information contained in a complex air traffic situation if the data were only available in written or tabular form. By presenting the same data in graphic form, a radar screen makes the information comprehensible.

Englebart estimated that hundreds of man years could go into developing the knowledge workshop concept. So far he and his team have concentrated on text manipulation with a black and white CRT, and techniques for collaborative work and team communication.

Engelbart demonstrated how the workshop could be used to create and change written reports. The system can maintain a text file broken down into many levels of abstraction: major sections, minor sections, subsections, paragraphs, sentences, words, even individual characters – to whatever extent the user wants.

The worker, then, can easily call up an outline of a paper by looking at section headings or subsection headings, call up a more detailed outline of subsections, or even, if he wishes, display a listing of the first line of each paragraph in a report.

Locating what he wants, a user can have a particular piece of text put on the screen, and then alter, edit or rewrite by creating new files on the electronic equivalent of a scratch pad. In all, there are some 150 selection and editing commands available.

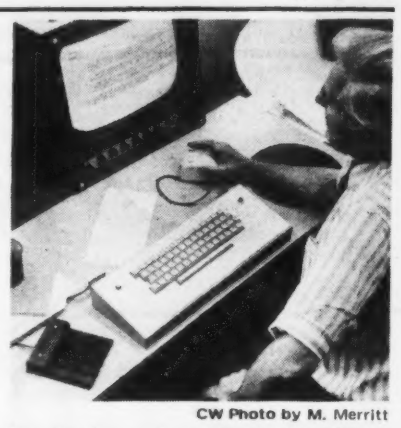
Englebart said this structured format allows and encourages an organized structure for verbal reports. By permitting rapid and painless reorganization, it also follows the natural pattern of a person creating a written document, he noted.

The workshop is also designed to ease interpersonal communication by "mailbox" and "journal" functions. By using the mailbox, a user can create a file intended to be read by another user. When the second user logs in, the system notifies him there is a file from the first waiting for his inspection. When both are on at the same time, they can use this for direct, back-and-forth communication.

The journal function is an extension of the mailbox, but instead of creating a file for only one other user, a journal file is open for inspection by all, and the system maintains a catalog of the contents of this library. The journal also records who reads each document, so the sender can check if his message has been received.

It is also possible to add a telephone circuit to the workshops and use a split screen capability for teleconferencing; for example, a writer and an editor could confer on a report, talking about it while displaying text and possible changes on the CRT. It is also possible to hold large conferences this way.

Engelbart said that efforts have concentrated on black and white text applications so far because of the lack of a cheap printer capable of producing hard-copy graphics – and most work done on the workshop eventually has a hard-copy requirement. Current developments of the system include integration of a cheap – $1,000 – CRT to the system to lower costs, and an interface with a very big data base to permit flexible formulation of sophisticated search procedures.



CW Photo by M. Merritt

The five-key pad on Douglas Engelbart's right can be used to duplicate the signals generated by the keyboard in front of him. The mouse to his left controls the location of a cursor on the CRT.

The researchers are also developing a workshop specifically for programmers, he said.

Use and development of the knowledge workshop will snowball as more people use it and develop it to meet their own specific needs, Engelbart feels, which is one reason development of the idea has so far been concentrated on creating basic functions to facilitate further development.

Stanford Research intends to open up use of the sytem by selling it as a utility service this fall. There are several probable customers already, Engelbart said, including Arpa, the Air Force and the National Bureau of Standards.

And this is just what he wants, because of the bootstrapping, snowballing effect. As people learn to use the system, they can freely add new tools and functions to suit their own needs, and these new functions will become available to all, making it easier to learn and use the system.

Virtual Storage on 360 Could Mean System Degrading

(Continued from Page 1)

child.

Any 360 virtual implementations would be subject to IBM 370 engineering and operating system changes, and suppliers would have to provide users with the latest versions of the operating systems, Compata said. The performance of a 360 VS system "could be improved dramatically" if a suitable paging device were to become available, the report said.

How to Do It!

In order to allow an IBM 370 virtual storage system to run on 360s, the following 370 features would have to be added:

- Compatible timing facility.
- System 370 supervisor mode instructions.
- Extended program status word mode.
- Dynamic address translation and translation lookaside buffer.
- Extended protection key.
- Program event recorder.
- Channel indirect addressing.
- Full 24-bit internal address handling.
- Byte-aligned operand feature.
- System-oriented problem state commands.

Implementation of these features could be accomplished through various combinations of hardware, firmware and software. But in at least one area – emulators – some problems could arise. The existing 360 emulation hardware will not be supported by the 370 operating system.

So without "considerable added expense, it will not be possible for [users] to run integrated emulation," the report said. Therefore 370 compatibility seems to be the most "attractive mode" in which to add virtual storage to the 360, Compata said.

Hardware will have to be provided to facilitate the dynamic address translation. It is possible to implement this DAT through either hardware or firmware but the performance of a "totally microcoded DAT would be very poor," the report said. A software form of virtual memory would be possible but "unless special programming conventions are followed, the [system] overhead is tremendous."

A 360 virtual capability would have to include provisions for running IBM control programs, compilers, utilities and linkage editors designed for the 370s.

In addition, applications programs written for the 370s would have to run on the 360 virtual machines. And these capabilities would necessitate that "all 370 operation codes must be provided" to users although "high performance may not be required."

Users of virtual storage on 360 systems will have to be provided with "370 services" such as timers and the Program Event Recorder (PER), the report said. Presently the PER is "little utilized," so leaving it out of a system would have "only limited impact." But it is to be expected that the PER will be used in a "general debug package" at some time in the future, Compata concluded.

In running the 370 operating systems on 360s, some minor software changes will be required. All of the operating systems have model-dependent modules such as channel check handlers and machine check handlers that "will have to be written for each S/360 model to which virtual storage is to be added."

According to the CLA document, the critical approaches to any 360 virtual storage capability rest with the methodology used in the DAT facility. If no physical address exists within the system, the translation will not take place and a page fault or interrupt will be generated. In the event of a page fault, the operating system will have to locate the required page and bring it into memory.

This can be accomplished in one of two ways. First the instruction that made the request must be terminated in such a way that it can be restarted. Usually this means that memory or registers cannot be changed before the interrupt. A second approach would be to interrupt the CPU.

With the first method implementation would be difficult since many instructions can reference data that spans page boundaries. And when an instruction can reference more than one page, all pages must be tested for the existence of a physical address before the instruction can be allowed to change registers, the program status word or memory.

On the other hand, the second alternative of interrupting the CPU cannot be accomplished by any existing externally available interrupt because the CPU will not honor interrupts until the current instruction is completed.

Because of these characteristics it is "impossible to design a DAT facility which connects externally on the memory bus and sees only addresses and data," the report said.

It is possible to overcome these difficulties by giving the DAT box access to signals within the CPU, Compata concluded, and/or a bus control unit which would allow it to "force microcode branches."

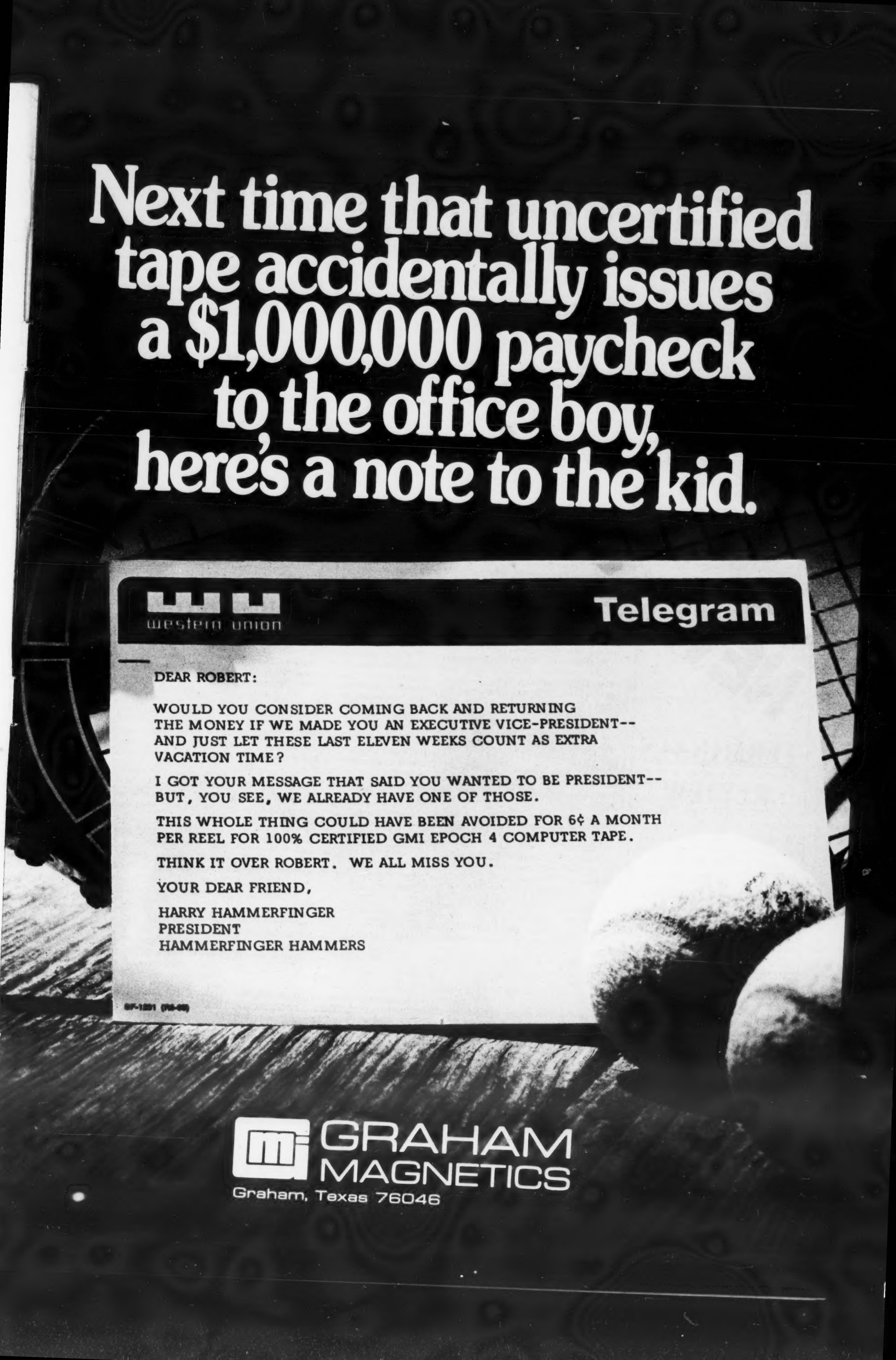
Another approach would be to provide an extended microinstruction format and to control the functions of the dynamic address translation hardware from the CPU microcode. In this case the entire microprogram of the 360 would be replaced to handle "operand address pretesting, channel indirect addressing and new instructions."

Variations of these two major approaches are used in all known virtual storage add-on systems, Compata said. The advantages of the external monitor system is that it leaves the microcode intact and requires fewer changes to the hardware system. But this method is more expensive and will require software assistance for emulating 370 instructions. This in turn will require minor modifications to the operating system.

The major disadvantage of the software emulation is that it will be slower than the firmware emulation. But the impact on throughput "will be slight" because the instructions unique to the 370s are little used except in "systems heavily oriented to floating-point operations."

How do the various models in the 360 line lend themselves to virtual storage? Compata's analysis of each major machine including advantages and drawbacks to adding VS will appear next week.

Next time that uncertified tape accidentally issues a $1,000,000 paycheck to the office boy, here's a note to the kid.



GRAHAM MAGNETICS
Graham, Texas 76046

Antitrust Laws, an Historical Perspective — Part IV

Grinnell Case Sheds Light on Market Definition Issue

By E. Drake Lundell Jr.
Of the CW Staff

The market definition issue played a large part in the U.S. vs. Grinnell Corp. case that was decided by the Supreme Court on appeal in June 1966, just as it had in the Alcoa case and as it is sure to do in the present IBM-Justice antitrust case.

In this case, Grinnell and its subsidiaries supplied several different types of "central station protective services," where devices were located on a client's premises to detect unlawful entry and fire.

Since IBM is being sued by the U.S. Government on antitrust grounds, a look at the history of antimonopoly legislation may help the computer community understand the arguments of the case.

Earlier parts of this series examined the roots of the current antitrust laws and looked at one of the major cases that has been tried. Part IV discusses another major case and analyzes how it might apply to the present action against IBM.

Some of the subsidiaries of Grinnell offered only one of these services (for example, just fire) while others offered a full range of services.

Overall, the court found Grinnell and its subsidiary companies had 87% of the nationwide market for these central station protective services, clearly a monopoly position as defined by the courts in the American Tobacco Co. case where over 80% of a relevant market was considered clearly monopolistic.

Therefore, the question was whether the central station protective services could be considered the relevant market alone or whether it would have to consider the entire protective services field as the proper market against which to judge the position of Grinnell.

This is relevant in the U.S. vs. IBM case in which the government is arguing that the relevant market is the market for "general-purpose computer systems," whereas IBM argues its performance has to be measured against the entire data processing market including general-purpose computers, software houses, peripherals companies, time-sharing outfits and service bureaus.

"The District Court treated the entire accredited central station service business as a single market and we think it was justified in so doing," according to Justice William O. Douglas who delivered the opinion of the Supreme Court in the case.

"There are, to be sure, substitutes for the accredited central station service," Douglas admitted. "But none of them appears to operate at the same level as the central station service so as to meet the interchangeability test" that was established in other cases, he added.

For example, he noted a person could get the same type of property protection by hiring his own watchman for his premises instead of going to the central station service, or he could install systems that set off an alarm in case of burglary or fire.

But, he said, "watchman service is far more costly and less reliable. Systems that set off an audible alarm at the site of a fire or burglary are cheaper but often less reliable.

Grinnell argued that despite the differences with these other types of service, its services did face competition from them.

The District Court found, and the Supreme Court agreed, that this competition meant Grinnell did "not have unfettered power to control the price of their service," but then looked at the whole matter from the customer's view.

"Though some customers may be willing to accept higher insurance rates in favor of cheaper forms of protection, others will not be willing or able to risk serious interruption to their business, even though covered by insurance, and will thus be unwilling to consider anything but central station protection," the court decided.

It is likely that the government, in the case against IBM, will similarly argue that many customers in the computer field will not accept anything but an in-house computer system for their data processing needs and therefore will contend these systems alone constitute a relevant "part" of commerce as defined by the Sherman Antitrust Act.

The court found Grinnell and its subsidiaries had a monopoly position in a relevant submarket and the court further found the Grinnell practices were aimed at keeping competition out of the market and therefore it was guilty of monopolizing under Section 2 of the Sherman Act.

One other area of that case that might have some bearing on the present U.S. vs IBM action had to do with long-term leases. Grinnell required its customers to sign five-year agreements under which the Grinnell subsidiaries retained the rights to the equipment that was installed.

The government argued that it should be barred from offering such plans to tie the customer in for such a long time, but Grinnell said if it was barred from such practices it would be at a competitive disadvantage.

However, the government countered this argument by claiming that since Grinnell was in violation of the antitrust statutes it "may properly be subjected to restrictions not borne by others."

Newest System/3 Includes Multiprocessing

(Continued from Page 1)

This is different from a virtual memory as each operation must be brought into memory in its entirety. Thus, the largest program that CCP can handle is 32K bytes, a spokesman said.

If the user runs the Model 15 without CCP, he is limited to two partitions each with a set maximum of 48K bytes.

Of special impact is the overhead functions. Without CCP the Model 15's memory must have a resident supervisor (to control memory, disk subsystem, communications) of from 18K bytes to 22K bytes.

If the user then chooses to run the foreground partition under CCP, he must add about 20K bytes to this supervisory requirement. Thus, a configuration running under CCP would require about 40K bytes of resident supervisory software to handle operations.

The communications capability using one or two Binary Synchronous Communications Adapters (BSCA) permits the Model 15 to function as a central processor in a terminal network or to act as a satellite processor in a larger network.

For example, a user could operate the Model 15 to help control inventory in several remote warehouses getting input over the phone lines from remote terminals.

Once the information is gathered, the Model 15 could perform some processing operations and transfer data to a System 370 or S/3.

Hardware Components

Main memory makes use of Metal Oxide Semiconductor Field Effect Transistors (Mosfet) similar to that used in the 370/115 and 125. This implies that memory can cycle much faster than the CPU and may allow sophisticated users to utilize the faster potential of memory for fast I/O.

Users can choose from memory capacities of 49K, 65K, 98K and 131K bytes depending on applications.

The CPU also includes a storage protection feature to prevent user programs from interfering with each other or with supervisory programs.

Operator communications with the system are through a console which includes both video display and keyboard.

The user can specify an on-line disk subsystem of up to 91.7M bytes. These systems are comprised of up to two fixed 5444 disk subsystems. (4.9M bytes each) and four removable 5445 disk storage drives – each with a capacity of 20.5M bytes.

Peripheral Control

The 18K-byte resident supervisory software allows control of faster and larger peripheral devices such as the 1403 printer with speeds of either 465, 600 or 1,100 line/min.

Other faster peripherals that can be attached include 3410/3411 tape subsystems (four transport maximum) and the use of the BSCA to communicate to 3741 data stations for floppy disk input and output.

An optional software program (that can also be used on the older Model 10s) is called Data/3 which provides conversational-type interaction between a remote terminal, such as the 3270 CRT, and the central system and allows the operator to interact with data files during inquiry and data entry.

The Model 15 can support "most" terminals compatible with the S/3/10 including the 2780, 3735, 1050, 2740 and 2741, IBM said.

Customer shipments of the Model 15 are scheduled to begin in the first quarter of 1974.

System	Maximum S/3/10	Maximum S/3/15
Memory size (bytes)	48K*	131K
Speed (μsec)	1.52	1.52
Disk		
Capacity (M bytes)	51.4	91.7
Number of drives	4	6
Configuration	two fixed 5444s 2 removable 5445s	two fixed 5444s 4 removable 5445s
Printer		
Speed	600-, 1,100 line/min	465-, 600 or 1,100 line/min

*64K by special request

Comparison of IBM S/3/10 and S/3/15.

Cost Figures

The lower of the cost figures includes the CPU with 48K-byte memory, 3277 CPU console, one 5444 disk (4.9M bytes), 5424 card unit and 1403 printer (465 line/min).

The larger dollar figure represents a system with 128K-byte memory, CPU, 3277 CPU console, one BSCA, one 5444 disk (4.9M bytes), four 5445 drives (20.4M bytes each), card equipment and 1403 N1 printer (1,100 line/min).

First shipments of the Data/3 are scheduled to begin in March and May of 1974 for the Model 10 and 15, respectively, at a charge of $120/mo.

At equal-time ACM 73.

The action's in Atlanta August 27-29. At ACM 73, the annual conference launching our second quarter century. The program is solidly balanced between the commercial and the academic, the practical and the theoretical. Applications and algorithms get equal time. People like Jackie Reynolds and Buell Evans on the ACM 73 committee have planned it that way.

The theme is "Computers in the Service of Man." Dr. Lewis M. Branscomb, Vice President and Chief Scientist of IBM, will kick it off in his keynote address. Over 100 panels, papers and symposia will carry it through the conference. Just about all of ACM's Special Interest Groups and Committees will participate in the dialogue-packed program.

Forum-style presentations by software houses will highlight the commercial program. You'll have a first-hand opportunity to learn about and discuss the latest in packages, developments and techniques. Papers and panels will cover a full range of applications in business, industry, education, medicine and government. Sample topics: automated payment systems, turnkey systems, mini-computer networks in business, information retrieval systems, point-of-sale automated transactions.

The technical program is stronger than ever. Subjects range from trends in computer technology and computer graphics to non-linear programming, polynomial algorithms and security in a multi-user environment. Sample paper/panel titles: Memory Allocation in Paging Systems, Impact of Virtual Memory Concepts on Project Design and Control, System Fragility in Complex Data Basics.

Throughout ACM 73, you'll get ideas, tips and techniques to help improve your management and professional skills. Subjects like project management, performance evaluation, controlling EDP costs and getting top management involved will be covered in depth.

And don't forget our famous U.S. Computer Chess Championship. Plus the excitement and Southern hospitality of Atlanta, one of the most stimulating cities in the country. Conference headquarters is at the Hyatt Regency, a unique hotel with a 22-story high lobby. You'll be able to choose from a wide variety of special events, including tours, entertainment and shopping shuttles. A number of activities are planned for children, too.

Full conference details and registration/housing forms are available through ACM 73, P.O. Box 4566, Atlanta, Georgia 30302 or ACM Headquarters, 1133 Avenue of the Americas, New York, New York 10036. If you're already an ACM member, plan to attend ACM 73. If you're not, join us there and convert part of the admission fee to annual dues. Either way, plan to be at ACM 73!

Association for Computing Machinery
1133 Avenue of the Americas
New York, New York 10036

acm

Association for Computing Machinery

Editorial

Tip of an Iceberg

The real story of the IBM System/3 Model 15 is yet to be told. This message came through loud and clear last week when the Model 15 was introduced.

Although this system appears to be the long awaited "bridge" between the System/3 family and the 370s, the announced capabilities are like the tip of an iceberg.

By combining a Mosfet memory with an on-line disk capacity of 91M bytes, IBM appears to be giving future Model 15 users significant upgrades already built into the system.

But the full impact of these features has been hidden. The initial Model 15 has a relatively slow cycle time of 1.52 μsec/byte which matches the earlier Model 10. And the on-line disk capabilities are described as strictly optional storage available to the more sophisticated users.

The 2,048 bit chip used in the Model 15 is the same one used in the 370/115 and 125. And the 115 has a cycle time of 480 nsec for two bytes. Clearly the Model 15 can operate much faster if and when IBM decides such a move is desirable.

IBM seems to be saying that it plans to bring the S/3 user along very slowly. And when it decides the user is ready, it may unveil the big fat world of virtual storage with the mere flick of a switch.

Our Chance, ICCP's Chance

The new Institute for the Certification of Computer Professionals (ICCP) may be the best thing that's happened to the computer community since before the transistor.

Or it could be as meaningless as some people believe the Certificate in Data Processing to be.

The choice is ours, the computer users and executives of today's business world.

Through constructive criticism and support of the advancement of our technology, ICCP will be successful.

If licensing of computer programmers ever becomes a reality, only such an institute will be able to prepare potential candidates and monitor their performance.

The government, the user community and the computer industry should watch ICCP, help guide it, and most important, support it.

From the New Editorial Director...

Fortunately for everybody involved – the subscribers, the advertisers, the staff and the publisher – *Computerworld* is a going concern. Fifty-one times a year a small but experienced group of reporters, editors, makeup and production people turn out a surprisingly thick newspaper. How they do it I don't know yet: if *Computerworld* is ongoing, the best Pat & Company could say of me is that I'm on *coming!*

I intend to do an irregular but frequent personal column, of which this piece is a pilot. It probably should have a title; when I started a column in *Datamation* (yes, I intend to mention competitors) back in 1960 I called it "Plus and Minus."

That would be good, because it would repeatedly remind me not to be all-negative, and certainly I've been awfully grumpy in my speeches lately. But Watergate is helping; when Richard gets an exceptionally good lump, I feel almost hopeful! And proud to be a (novice) journalist!

But "Plus and Minus" belongs to Bob Forest, I suppose. Another title I thought of was "The Big Byte," which alludes to the fantastic rumor that Galactic Headquarters is considering one more chicken in several billion pots. A little ephemeral, however – and it sounds more ill-tempered than I really want to be. There's no rush; I'll be the *new* editorial director for quite a while. Suggestions, publishable as letters or private, will be welcome.

I also plan to write many of the formal editorials. The other editors and perhaps an occasional guest will do the rest. When I go someplace unusual, like Santiago (ah, there, Stafford!) or Chico, Calif., I'll try to make a column out of it or do a bylined story in the news pages.

The reference to Stafford Beer reminds me to warn new readers that I tend to be excessively insidery and allusive, so you have to work at it a bit; I would hope not to be so cute as to subject you to the pangs of Dorothy Parker's "Tonstant Weader," who fwowed up.

The Letters to the Editor section has been pretty blah. I'll read them for a while and look for items to answer. My policy will be that in general the customer has the last word; I've got lots of other coops to cackle in.

Pat McGovern is playing all sorts of fascinating entrepreneurial games overseas. CW now has a sister weekly in Tokyo with other foreign relationships hopefully upcoming. Later this year I intend to work out rather extensive news exchanges and expand our international perspective – for North American readership, of course.

We have subscribers and advertisers in Canada. Right? Friends, right? Hard currency (sob!), right? CW covers their scene rather spottily; I'll try to do better.

Maybe next year we can start an historical thing. The Smithsonian project, Aunt Grace's farmhouse attic, my own poignant memories – can you imagine an insider witnessing Generous Electric *entering* the computer business??

Anyhow, we've had ADP for over 80 years, commercial electromechanical equipment and Friendly Local Salesmen for over 50, the dubious blessing of mass-produced electronic gear for 25, and the curse of software for 23; there ought to be some trace of that somewhere in CW.

Tune in next week or so to hear about IBM, Alan Taylor, and how I joined the 240Z Club of New England.

I'm glad to be aboard!

Herb Grosch

Letters to the Editor

Antitrust Fines Up

E. Drake Lundell Jr.'s brief comment on the Sherman Antitrust Act [CW, June 27], while accurate in stating the amount of the fines originally imposed by the act for violations, should point out that the fines for violation of sections 1 and 2 of the Sherman Act were increased to $50,000 by Congress in 1955 and that consideration is now being given to increase the amounts to $100,000.

In other words, violations do not come cheaply.

Martin J. O'Donnell
Cesari and McKenna
Attorneys at Law
Boston, Mass.

ACM Clarifies

Reference ACM Member-Officer Forum which was held in New York on June 6, 1973, during the NCC [CW, June 20]:

The statement attributed to Joseph Cunningham, executive director of ACM – "I won't guarantee perfection, but we will get pretty close to Ivory soap" – was meant to apply *only* to the handling of membership records for our members, rather than applying to *all* ACM activities.

While he, the entire headquarters staff and the officers strive toward such perfection, we admit there is a distance to go before achieving it. Major emphasis has been placed in providing better service in handling correspondence, renewals, subscriptions, etc.

Regarding the bylaw change, the article stated, "Previously, any 10 members of ACM who felt some issue was important could petition for a general referendum. The bylaw change stated that 5% (about 1,000 members) of the association had to petition for this general referendum."

The ACM Constitution (which can only be changed by the members, not just by the council) states, "Upon petition of 1% of the members of the association or by decision of the council, a question to the association shall be submitted without undue delay by the secretary to a ballot of the association by mail . . . "

Currently this means that approximately 200 people would be required for such a referendum which is generally referred to within ACM as "a question of importance." There is no way this number could be changed from 1% to 5% without a vote of the membership.

The issue under discussion had to do with the specific provision for revoking a chapter's charter. This method is specified in a bylaw, and was indeed changed by the council at its December 1972 meeting in Anaheim.

The primary reason for changing the provisions was to make them somewhat more consistent with provisions for revoking the charter of a SIG (Special Interest Group) and also with the other rules for requesting a referendum as given above.

It was felt by the council that allowing 10 members of a chapter to force a vote of the entire ACM membership on whether their charter should be revoked was inappropriate.

Jean E. Sammet
ACM Vice-President
New York, N.Y.

The Rating System...

...Causes Software Unreliability

One of the mysteries of computers, so far as the general public is concerned, (and this includes responsible auditors, etc.) is how computers can possibly be so error-prone. Run by the highest mathematical geniuses, built by the greatest engineers, and supported by a greater inflow of money than any other scientific development has ever been offered – and yet "computers" constantly and consistently make very stupid mistakes.

No one has ever given the public a good reason for these mistakes. Frankly, I have not been able to give a good reason either.

The Taylor Report
By
Alan Taylor, CDP

There have been some obvious contributary causes, such as the arrogance of systems designers and the almost total lack of understanding of the difference between data and information, which have plagued the profession for decades. These causes, however, are not the prime force that spawned the original problem, but are simply symptoms of how the problem has perpetuated itself and is now poisoning the usefulness of data processing.

Underneath this symptomatic surface the mystery continues. Where are the primary problems?

Why were the problems of unreliability not being solved by the use of Cobol, the high-level machine-independent English language?

Unreliability in programming has been a nagging problem with me since 1957. At that time the drive for reliability was probably stronger than now. It forced me (independently of the work of Grace Hopper in the U.S.) to invent a machine-independent English language programming system, and later, to carry out experiments in the British war office to prove the English language's power to provide computer reliability.

Programmer productivity is only a by-product of Cobol – the real importance of English-language programming is that it provides the capability for reliability and management, and so can greatly extend the usefulness of data processing, and make it easily workable by humans. This has been known since the 1950s.

Yet, here we are, a decade-and-a-half later, still with major unreliability problems. And now they are so well known that they are used as an excuse which can allow the cover-up of gigantic business frauds like the Equity Funding case. And no one seems to be doing anything to stop the unreliability, which is even more discouraging. But the basic question remains. What is the basic cause of our disinterest in reliability.

Prime Cause Found?

I believe I have found what appears to be **the** – or at least **a** – prime reason for this continuing unreliability. I found it in the *IBM Product Analyses,* which are now public. The data was in the specific analysis of the software capabilities of IBM versus competitive software. The analysis itself was quite interesting, but much more important was the rating system used to determine what piece of software was superior.

The IBM rating system divided the characteristics of software into three areas: the number of functions or facilities, the performance of the system, and the human factors area (how easy to use was the system).

As I said I am primarily interested in reliability. I am interested because I feel that only by providing a high quality of information can we use the power of data processing to its maximum extent.

Proving high-quality information is rather like the provision of high-quality water in a public water supply system. There are uses for water in which the presence of typhoid germs is not important. But if a water supply cannot be certified 100% free of typhoid germs – even though the prime suppliers of water systems do not necessarily understand the need for such checking – then the use of that water supply sooner or later must be severely restricted. And both the water engineers and society in general will be the losers.

The quality of current information systems is controlled by humans. And I believe the human factors are the most critical reliability item included in the IBM rating system. I do not really care how useful a particular facility is, if it is too hard to use properly. Making a facility hard to use is an invitation to having it used improperly.

The Irresponsibility of Suppliers

Currently, improper usage often leads to a basically irresponsible position, where the supplier says something like "But I told you not to do that. Look on page 537, sub-paragraph B in my newsletter issued three years ago! I told you not to do it;I am not at all responsible for any damage that occurred when you did do it."

After the human factors have received their appropriate consideration, then I think the rating of performance, and even additional functions or facilities of the software, is best decided by the general situation. I do not see any universal rule but if I was constrained to pick some particular ratio, I would make these two factors approximately equal.

If anything, performance seems to be more important than facilities, as increased performance generally results in the creation of additional facilities because of the increased economies.

By contrast, placing requirements for additional facilities into the system often causes it to degrade its performance. Over-concentration on providing additional facilities, while perhaps superficially useful in the sales area, is liable to be paid for directly in the performance area.

Really then I would be inclined to put performance second to human factors, and then facilities last (Note: facilities refers to additional facilities after the essential items of the piece of software have been met. Obviously a sort that does not sort, or a compiler that does not compile the language is simply not performing. Essential facilities, therefore, do not come into this consideration, just the gimmick-type areas which may be useful – but can be irrelevant to many installations.)

In total, therefore, my rating scheme, based upon a need for reliability, would be 50% for human factors, 30% for performance and 20% for facilities.

Now, have you considered how you, as a person responsible for the operations of a data processing system, would value these three factors? Performance, facilities and human factors? If you haven't taken my test, please do so before going any further, because I am about to say what the IBM figures are. Just to assist you in not peeking, they are printed in the next paragraph upside down!

The IBM figures are: 60% for facilities, 25% for performance and 15% for human factors.

The results of this 60-25-15 evaluation – which is the one that apparently guides the very top decisions on software at IBM, puts a premium on facilities and almost disregards human factors. It causes complexities – which are error-prone – to be valued too highly, and human ease – which is measured in error-avoidance – is neglected.

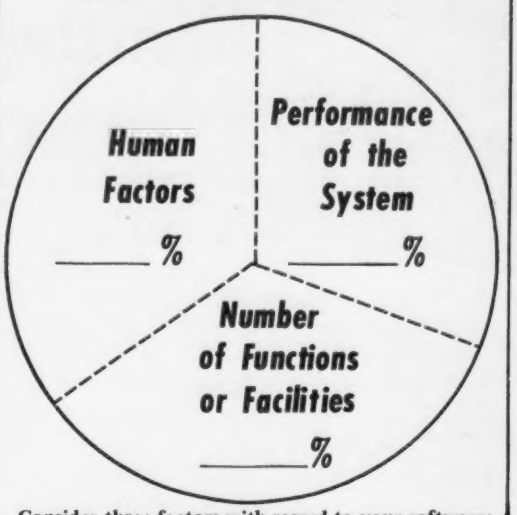
No wonder software and computers are unreliable, and specifications and testing are inadequate. All these can easily flow from such a management priority system. And no wonder users do not require reliability, when the constant flow of admitted IBM bugs is not objected to by the leaders of our profession.

While systems arrogance, poor specifications, and everthing else fails as a basic cause of the processing unreliability and errors – this management controls system, which so exhalts the facilities and degrades humanity, can very well be the prime cause of computer unreliability.

I do not know if this system – the IBM management control system for evaluating software – is the prime cause of the current unreliability of data processors. But I do know there is such an unreliability, and that no other potentially possible cause has yet come to my notice. And I am certain that such a control system by such an important organization with IBM's hold over data processing is quite capable of being the main cause.

I believe it is the cause, but I would be delighted to consider other possible causes. If you know of any way of fighting this dangerous evaluation system I am very interested in hearing from you.

Take This Test First



Consider three factors with regard to your software: number of functions or facilities, performance of the system and human factors (how easy the system is to use). Remember that your software is liable to be used by other people than yourself, and sometimes may be used without you even being around.

Under these circumstances which of these three would you regard as most important? What percentage points would you give to it? And what percentage points would you give to the others?

U.S. Steel Support for Codasyl Being 'Laundered'

The role of U.S. Steel in the operations of the Conference on Data Systems Languages (Codasyl) has been discussed in both letters to the editor and in this column. The support given in the past included the provision of staff, publishing, printing, and postage for a so-called Codasyl Newsletter, which purported to be put out by the Programming Languages Planning Committee.

In fact, as the Planning Committee can only act under its constitution as a body of the whole, and as no meeting of the Planning Committee had ever approved such publication, there were substantial questions as to the propriety of U.S. Steel's support. The Executive Committee even started working on forming a corporation out of Codasyl to restrict the risks of a suit arising from the publication of the newsletter.

Now, however, U.S. Steel support, which was previously given somewhat improperly, has been "laundered" very much in the way some of the checks to the Nixon campaign were laundered. Not by putting the support through a Mexican bank, but in an elegant six-step operation, all of which occurred during the June 1973 Codasyl Executive Committee meeting.

As far as I can reconstruct what happed, the operation went something like this:

Taylor Thoughts

- U.S. Steel stated it would no longer provide any support for the Planning Committee. This then left the two U.S. Steel employees who constituted the two appointed officers of the Planning Committee without the right of Codasyl membership.
- As a result, the Executive Committee lost its secretary, Warren Simmons, as he was no longer entitled to Executive Committee membership.
- U.S. Steel stated it was prepared to continue Executive Committee support, including, if appropriate, the publication of a Codasyl Newsletter.
- The Executive Committee then created a new voting committee membership – consultant – and appointed U.S. Steel employee Warren Simmons to the post. No authority for this change in the constitution of the conference was sought from the members of the conference.
- The Executive Committee decided to publish the newsletter itself with U.S. Steel's support.
- Noting the only Planning Committee activity that the Executive Committee was interested in (the newsletter operated under its own control) was no longer a Planning Committee activity, the Executive Committee then proceeded to abolish the Planning Committee – without any reference to the British Computer Society, the Australian Computer Society, Cabe, Adapso, or any of the other members of the conference, which were involved in this unannounced, (and quite probably improper) action.

The net result is that U.S. Steel now has a "reason" authorizing it to continue to support the activities of Codasyl. It still has to explain, however, as to why such support does not include the maintenance in the public area of the documents, and archives of the committee and conference. Certainly its employee Warren Simmons still is refusing access to both Planning Committee and Executive Committee public data.

Until this is stopped and full access is given I do not think any legalistic laundering of the support will produce a whitewash of Codasyl, even if it does let U.S. Steel off the hook.

You can tell a lot about BASF/Endura computer tape from the professionals who use it.

They're the people who demand more from a computer tape than just accuracy.

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SOFTWARE&SERVICES

Random Notes

MMS Links General Ledger To Total Data Base System

ANDOVER, Mass. – Software International Corp., a subsidiary of MMS Inc., has adapted the MMS general ledger system to operate under Cincom System's Total, a data base management system.

While various report writers have been interfaced with Total, this may be the first commercially available application package to be adapted to the independent's data base environment.

Through the interface, the general ledger system – which had been limited to IBM 360/370 – becomes operational on the same range of hardware as Total, including Honeywell 200s, 2000s, Univac 9400s and Series 70 CPUs in addition to IBM mainframes.

Software International is at 2 Elm Square, 01810.

Boothe Adapts 'Cims' Software To Utilize DOS Job Accounting

SAN FRANCISCO – DOS/360-370 users can install a new version of the Computer Installation Management System (DOS-Cims) from Boothe Management Systems to generate reports for job accounting, multiprogramming analysis, resource utilization, operator efficiency and programmer performance analysis.

While the earlier OS-CIMs linked to SMF data, the new software gathers data from the DOS Job Accounting module and produces both detailed and summary reports.

DOS-Cims functions in "real" or VS installations and sells for $2,000 or rents for $65/mo. Boothe is at 555 California St., 94104.

$25 Package Scans Data Sets

ATHENS, Ga. – A small but potentially useful Fortran IV program, Character String Scanner, searches a data set for any specified group of characters.

Developed originally for Goddard Space Flight Center, the scanner is now identified as GSC-11787 and available for $25 from the Cosmic clearinghouse here at the University of Georgia.

Output of the program is a listing of the data set being scanned with the specified group of characters, if found, flagged by asterisks. The program, made up of "approximately 79" card images, can be ordered from 112 Barrow Hall, 30602.

Remote 'Re-Act' Now on BCS Net

DOVER, N.J. – A retrieval/report writer system initially distributed as a package for in-house equipment, Re-Act is now available as a remote job entry capability on the Boeing Computer Services remote-computing network under either Conversational Terminal Service (CTS) or Mainstream, the BCS adaptation of IBM's TSO.

Tape Buyers Get Librarian

SANTA CLARA, Calif. – Free "bundled software" has made a reappearance but this time the tie-in isn't to mainframe or even peripheral hardware. Instead, Memorex is now offering a tape librarian program to any user who agrees to order a year's supply of tapes or disks from the company.

The librarian is best suited for the medium sized installation, Memorex said, explaining that libraries of less than 300 reels could do the job as easily by hand, and libraries with more than 10,000 reels "probably need more support than this software can provide."

The librarian works under either DOS or OS/360 environments, based on user entries into a status file. The program logic has been developed, however, so that users should be able to easily build an interface with such input sources as System Measurement Facility (SMF) provided by IBM under OS.

From the input, the librarian generates three basic reports "usually on a daily basis."

The other reports show: the library by volume serial number with related data similar to the data set name report following after the serial number, and a list of tapes that could be released as of the reporting date along with some history of the tapes including last date cleaned and last date certified.

Written in ANS Cobol, the Memorex give-away is described as flexible, easily installable and modular. Users will be provided source code.

Logic Tables Built, Translated To Cobol Source Code by 'DLOT'

By Don Leavitt
Of the CW Staff

BUFFALO, N.Y. – DOS/360-370 users can move from fragmented expressions of application logic through creation of validated decision tables, into translation of those tables, into Cobol procedure code, with the Decision Logic Optimization and Translator (DLOT) package from MK-Software.

Many users have recognized the value of decision tables as orderly means of defining what they want a program to do. And various vendors have offered software to translate the tables into Cobol source code. But DLOT is one of the first support packages to help the user put his thoughts into table form before translating them.

The tables are created out of entries on various types of cards which define, on the one hand, conditions to be met and actions to be taken if stated patterns of those conditions prevail, and, on the other hand, unacceptable individual condition settings and unacceptable condition patterns.

Such patterns may include settings that are valid individually but illogical when grouped together, a company source noted.

The DLOT program analyzes the input and flags any inconsistancies. Otherwise the program creates as concise a decision table as possible and then, if the user wishes, creates a mainline segment of Cobol procedure source code to implement the logic defined in the table.

Whether the mainline coding generated is **THE** mainline of the user's developing program depends on his requirements. In any case, he will have to add all the coding for the non-Procedure Division portions of the program, and all the coding needed to actually take the actions called for by the decision table.

The coding generated by DLOT is said to be extremely efficient but, in fact, the sample program provided by the vendor appeared to have some redundancies without any particular explanation as to the reasoning behind them. Nonetheless, the DLOT approach does provide a standard mainline form to all programs in which it is applied, and debugging and general maintenance should be simplified.

One of the features of DLOT is the user's option to stop after the decision table has been created. This would allow a thorough review of the logic actually generated, comparing it to whatever logic the user had intended, before the Cobol coding is generated.

DLOT is itself written in Cobol and has been used under DOS/360 in 32K bytes.

The package is available now but a firm price has not yet been determined although a spokesman estimated that it would be "about $2,500." The firm is at 50 Welwyn Circle, 14223.

3270 CRT Work Aided by DMS-II Control Sheets

WHITE PLAINS, N.Y. – Development of on-line applications using IBM's 3270 information display systems under Customer Information Control System (CICS) will be made simpler with the Display Management System II (DMS-II) support package to be released by IBM in October.

Like the original DMS that supported the 2260 CRT terminal, DMS-II actually does nothing the programmer couldn't do for himself, but it does cut down on the effort required to get the desired results.

The program utilizes a "fill-in-the-blanks" approach that permits the user to define his application requirements without actually having to program them.

DMS-II provides access to 3270 features including the light pen input instrument, variable intensity of the displayed fields, and the ability to block specified fields from being displayed to unauthorized viewers

"Coding" with DMS is done on a set of preprinted forms.

One type resembles the layout of the display terminal and allows the user to describe where the data is to be displayed.

Other forms describe the files to be accessed and the file maintenance operations to be performed.

From all this information DMS-II generates a CICS application program which can be run immediately, IBM claimed.

A fully supported Program Product, DMS-II for OS/VS1 or OS/VS2 environments will be available in October at a monthly charge of $375 under license. For DOS/VS installations, DMS-II will be ready in June 1974, for $275/mo.

In each case, CICS – a prerequisite – carries a separate fee of its own: $700/mo for OS users, and $350/mo for DOS shops.

Line Printer Simulates Plotter

CAMBRIDGE, Mass. – Pen and electrostatic plotters can be simulated on remote TSO-driven terminals or on-line printers with an updated version of the Esplot software package from Earth Sciences Research Inc. (ESR). The original Esplot was available for CP/CMS users with 360/67 CPUs.

The package is compatible with most standard pen plotter support software, ESR said, and would be useful in both business applications and "quick look" scientific operations.

It cuts program development time by supporting tests on systems even though they don't have actual plotting facilities. Conversion to production use with actual plotters is very simple, the company added.

Where high accuracy is not required, but graphic display would be useful, the software cuts plotting costs by eliminating the need to generate the many small plotter step increments for actual production runs. A display on a line printer may quickly highlight a critical situation that would be lost in a tabular printout,

Interface with the package is through Fortran or Cobol subroutine linkage. Output is normally 132 characters wide by 60 lines deep but may be expanded or contracted to fit user requirements.

Included as part of Esplot are routines to plot, scale, draw axes and generate titles and other annotations. Written in Fortran, the package costs $1,000 including documentation. The firm is at 133 Mt. Auburn St., 02138.

COMMUNICATIONS

Data Briefs

Transaction Terminal Reads Optical, Magnetic Codes

EL SEGUNDO, Calif. – Data Source Corp. has introduced a transaction terminal that simultaneously captures both embossed account numbers from the face of a bank charge card and magnetically coded data from the reverse side.

This allows the terminal to handle either optically coded or magnetically coded cards, and to check for contradictions between the two types of coding on the same card.

Named the Model 1133, the terminal will cost about $800. Lease plans are also available, and first deliveries are set for this fall.

Data Source Corp. is at 2350 Alaska Ave., 90245.

Batch Terminal IBM-Compatible

MINNEAPOLIS – Offering compatibility with IBM 3780 data communications terminals, Data 100's new Model 71 Batch Terminal provides card reading, line printing and data communications capabilities.

Basic configuration includes a 300 card/min reader, 300 line/min printer, and a terminal control unit. The system features dual 512 character buffers, compression/decompression, and bi-synch data transmission at 2,000, 2,400, 3,600, 4,800 or 7,200 bit/sec.

Deliveries are expected in the fall of this year. Lease price will be $810/mo on a one year lease, including maintenance, from the firm at 7725 Washington Ave. So., 55435.

IBM Has Control Terminal

WHITE PLAINS, N.Y. – IBM has introduced a numerical control terminal that allows users to test and modify programs used with automatically-controlled machine tools.

Designated the 5275, the display terminal includes 270K characters of storage and operates with the Machine and Display Application Program (Mdap). Step-by-step instructions are prepared by the terminal operator and displayed on the screen.

The 5275 can control two machine tools and can operate with most 370s through either an IBM 2701 controller or the 3705. It can be connected to the integrated communications adapter of the 370/115 and 125, and the terminal transmits information at 1,200 bit/sec.

The 5275 costs $29,600 or $740 on a monthly rental basis. Under the Extended Term Plan (24-months) the rate is $630/mo. First delivery is set for February, 1974. Mdap will cost $300 and will be available in December for OS/VS1 and VS2 and in March, 1974 for DOS/VS.

In Real-Time Systems

'Income' Messages Deserve Priority

By Ronald A. Frank
Of the CW Staff

CHICAGO – Any real-time fast response DP system should be geared to handle only those high-priority messages that "directly increment gross income." Usually this type of message is related to the entry of orders, according to John E. Letson, vice-president of the computer systems division at Bache & Co., Inc.

Speaking about problems dealing with the response time of real-time systems, Letson recently described the Bache Automated Communications and Order Match (Bacom) system. Although primarily designed to handle the stock and other security orders handled by Bache, Letson said the real-time trade-offs used with the Bacom system could be applied in other industries such as manufacturing.

In classifying the messages that receive the highest response priority, Letson said orders, questions that could result in orders, order adjustments, and order status requests were included. Information related to orders is stored in a special easily-accessible file within the Bacom system, he said.

Must Isolate Troubles

The most important consideration in the design of a real-time system is the user's ability to isolate components which are contributing "negative response time" Letson said.

As an example, he described the time required to enter data into a terminal. In this case the preparation of data on a teletypewriter was adding time to the fast response system.

The solution was not to increase the speed of data transmission but instead increase the entry speed of the terminal, Letson said. Input time was reduced with the addition of multi-function keys which effectively "cut keystrokes up to 50%," he said.

In addition, CRTs were utilized to simplify the operator editing procedure The net result was faster processing of individual orders.

One innovation introduced into the Bacom system involves CPU-originated repeat inquiries on market orders that are not immediately answered. If a request comes in for the status on a market order, it is normally sent to a specialist on the floor of the proper stock exchange, Letson explained.

If an answer to the inquiry is not received within 15 minutes, the Univac mainframe initiates an automatic second inquiry. All pending unanswered inquiries are stored in a special 15 minute inquiry file, Letson said. After three attempts, the inquiry is automatically sent to a "special handling desk" where operators try to get an answer.

Using this type of approach, there is no reason why the CPU cannot be used to follow-up on time-critical situations, Letson said.

More Than 385 Terminals

The Bacom system utilizes a Univac 494 real-time processor along with a mix of terminals that includes 250 Model 35 ASR teletypewriters; 125 Model 35 RO TTYs, 10 Uniscope 100 CRTs; and a few Sycor 205 TTY-compatible terminals, Letson said.

One problem often plaguing the business user is related to the batch processing characteristics of certain mainframes, the user said. When a fast response communications-oriented capability is added to a batch-oriented DP site, the "batch software is often stretched out of proportion," Letson said. In such a situation, the addition of a front-end line controller or communications processor may be worth the cost, he added.

One of the critical problems in designing a real-time system is establishing viable system volume. In the case of Bacom, the number of messages is directly tied to the volume of stock transactions, Letson said.

In 1971 after a major government economic announcement, the number of daily orders processed by Bache jumped from 6,000 orders to 14,000. The best way to allow for peaks and valleys of message volume is to design for an average midpoint, Letson advised.

Package Allows DEC PDP-11s To Emulate Hasp Workstations

By Don Leavitt
Of the CW Staff

EUGENE, Ore. – Any 12K PDP-11 with DEC's standard DOS can be used as a Hasp workstation linked to an IBM mainframe, including emulation of an 1130, 360/20 or other 360/370 workstation, through use of the Hasp-11 software now available from Oregon Research Institute (ORI).

All of the remote job entry capabilities of Hasp are supported by the new package, but it also provides some facilities that are not normally available under Hasp.

It will handle as many as seven input and eight output (punch or print) datastreams concurrently. While that load is being processed, the remote operator can communicate with the Hasp operator, or with the Hasp software itself at the central CPU.

Hasp-11 supports a terminal to terminal (PDP-11 to PDP-11) networking mode that isn't possible with conventional Hasp workstations. According to ORI, this facility permits concurrent transfer of as many as 14 files and two console message files.

The ability to transmit seven input streams to a Hasp central facility is based on device independence advantages of DEC's DOS.

PDP-11s with the ORI software can drive a mix of low- and high-speed devices (up to 9,600 bit/sec) without degrading overall efficiency, the Institute claimed.

A dynamic line stabilization routine insures the integrity of the communications link when encountering noise. Cyclic redundancy checking is performed by the software and the Hasp-11 equipped system has two- or four-wire capability.

The full Ebcdic character set can be transmitted, or received, by units with the ORI package, which is written in PDP-11 PAL, and requires a KW11p or KW11L clock and DP11-DA synchronous line adapter. The lease purchase price is $2,600/CPU.

ORI is at 488 E. 11th Ave., P.O. Box 3196. 97403.

IBM Corrects Tcam Statement

WHITE PLAINS, N.Y. – Admitting that an "error" had been made in an earlier statement [CW, June 27] an IBM spokesman said that Tcam level five software had been "completed on schedule." In addition, the Tcam software is now being tested at several user locations despite an earlier IBM statement that no tests were underway, and Tcam level five was still under internal development.

"The tests started in the spring of this year and will terminate no later than early fall," an IBM spokesman said. Although the locations of the customer test sites could not be revealed, the spokesman said "OS/Tcam level five and NCP under OS/MFT/MVT is running under release 21.6."

The IBM statements were made in response to speculation on why Tcam level five had been delayed from its original March 1973 date to the third quarter of this year.

In response to another statement that NCP software might never be released, an IBM spokesman said "we are committed to delivering NCP." The spokesman said the incorrect answers had resulted from a failure to check with all available sources within the company.

Bits & Pieces

Portable Punches Can Be Used To Collect Data in the Field

EL SEGUNDO, Calif. – Dynapunch has announced a series of portable card punches designed to be used by an operator with a hand held stylus.

The portable punches are expected to find use in applications such as meter reading, inventory control, etc. where it is easier to take the punch to the data than working from intermediate source documents.

The stylus is designed to remove chad regardless of punching angle.

Also available are pre-perforated cards, for use with any standard 80 column reader, he continued.

Punch prices range from $40 to $100 from the firm at 999 N. Sepulveda Blvd.

PDP-8 Users Get Added Storage

ANAHEIM, Calif. – Datum's new drum memory system is designed for use with DEC Models PDP-8/E, PDP-8/F and PDP-8/M minicomputers.

The Datum 5100 is a self-contained, modular, word-addressable bulk storage system that consists of a rotating head-per-track drum module, a controller and all interconnecting cables.

The drum system provides from 262K to 1M words of storage. Average access time is 16.9 msec.

In operation, data transfers may vary in length from one to 4K words. Continuous data transfers 'spiraling' across data tracks are handled automatically.

The 5100 system is a direct replacement for the DEC RF08/RS08 controller and disk and operates via a three-cycle data-break facility built into the memory controller.

Basic 262K word modules mount within the PDP-8/E and PDP-8/F mainframe chassis with no mechanical modifications.

The system's controller can control up to four basic 262K word subsystems.

Basic price is $6,750 from the firm at 170 E. Liberty Ave., 92801.

OCR Unit Has Double Throughput

BEDFORD, Mass. – ECRM, Inc. has added a second optical character recognition (OCR) system to their series of OCR systems.

The newer Model 5200 doubles to 500 word/min. the copy throughput compared to the Model 5100 announced in March of this year.

Copy for the 5200 is prepared on a Selectric typewriter and converted into unjustified punched paper tape.

Price of the 5200 is $37,500 installed from the firm at 205 Burlington Rd., 01730.

Interface Offered to DEC Users

MAYNARD, Mass. – PDP-8 and PDP-11 users who use their minicomputers for industrial data acquisition or as control computer systems can obtain new modules for the Universal Controller interface (UDC) which reduces the number of intermediate devices required between the interface and the process transducers.

DEC's new modules plug into the UDC and add direct analog input, direct AC input and a heavier duty AC/DC output.

Cost for the three modules – Isolated AC/DC Driver, Isolated AC Power Signal Conditioning and Multirange A/D Converter – are $345, $225 and $1,100 respectively.

Naked Mini Dressed Up

BEDFORD, Mass. – Computer Automation, Inc.'s Naked Mini and Alpha 16 minicomputers have been added to the list of processors, that can attach the Innovex diskette moving-head memory system.

Cost of the interface is $200 from Innovex at Four Alfred Circle, 01730.

Two-Year Search

User Finds Upgrade for His Tired 1130

By Michael Weinstein
Of the CW Staff

MARION, Ohio – What does an IBM 1130 user do when his old and faithful computer finally needs to be retired and a new computer must be found to take its place?

Douglas Denzer, DP manager for Fairfield Engineering Co., here, spent two years looking at IBM, Honeywell, NCR, CDC, etc. for a suitable upgrade that would be cost justifiable and not require major rewrites of existing programs.

But each of these was less than ideal, Denzer stated, and he was just reaching the point of making a compromise when he recieved a call from a company (General Automation) that he had never heard of before.

But this unsolicited call has led to the leasing of an 8K word GA 18/39 which provides, according to Denzer, six times the throughput of the 1130.

The Old 1130

"When I first arrived at Fairfield, they had an IBM 1130 Model 2B with a 16K core memory. Most processing was done from a disk subsystem consisting of five 2310 drives which had a total storage capacity of 2.5M words (16-bit word).

Other equipment included an IBM 1132 printer (110 line/min.) and various 300 card/min. devices. This total system rented for about $3,900/mo, Denzer said.

While the 1130 had been a servicable machine for the company during previous years, work requirements were now coming in faster than the machine could handle them.

The first thought was to upgrade to a 360/25 because we became enamored with the possibilities of DOS and MIS, Denzer remembered.

But on further analysis, it became clear the 360/25 was not that good for scientific applications such as our 1130 was.

This inefficiency is most noted in the difference between the handling of word and byte Fortran. We took an 8K word Fortran program from our older 1130 and found the newer 360/25 required 24K bytes to process it.

This led us to look more carefully at the 360/25 with the final conclusion that overhead was too extensive on the Model 25, Denzer said.

Looking for a Better Home

Feeling there must be a better alternative than the upgrade to the 360/25, Denzer began investigating other sources with his first potential suitor being Honeywell.

"We were initially very interested in the HIS 1630 as it was described to us as a direct replacement for the 1130. But we never received anything from Honeywell other than promotional literature even though we asked for specifications and costing information," Denzer said.

Our next option to be considered was the HIS 110, but this fell through because of the non-scientific nature of the mainframe. From Honeywell, Denzer moved through NCR and CDC looking for a good alternative to his overworked 1130.

"While most of the machines we viewed were plausible replacements and some were quite good, we continued to hope that we might find an upgrade that could be considered ideal," Denzer stated as to why he continually held out.

At about this time, Denzer received a telephone call from a salesman for General Automation (GA) in which the salesman said that GA had a machine that they were selling as a direct replacement for the 1130.

Denzer remembers his attitude as skeptical, as he had never heard of either the salesman or his company. His reaction was to ask for literature and request the salesman call him again at some later date.

But on receiving the literature, Denzer became intrigued and later agreed to a follow-up call.

This led to the eventual replacement of the IBM 1130 with GA's 18/30 Disk Monitor System (DMS). The new 8K word DMS system is cheaper, faster and larger than the 1130, Denzer said.

Processing speeds for the two machines are 1.2 μsec for the 18/30 compared to 3.6 μsec for the 1130. Peripherals for the 18/30 include a 10M word disk subsystem, 600 card/min reader, 600 line/min printer, teletypewriter and a tape drive for file back-up.

Cost for the 18/30 is $1,700, Denzer stated, but it would be $600 more per month if we did not do our own maintenance.

Speaking of the total compatibility, Denzer stated that he uses IBM documentation for all operations. Further he noted that a 480 program library was converted from the 1130 to the 18/30 in one day.

"All we did was to dump each program in object form and then reload the cards into the 18/30.

"The systems were so compatible that when I had a paper tape punch for the 18/30 but did not have the software driver, all we did was go to a neighbor who had an 1130 and borrow his software for the IBM 1055 punch.

"When we got back home we loaded the software and attached the punch and it ran," Denzer said.

As a secondary example to show the compatibility between his new GA 18/30 and the existing 1130 series, Denzer stated that he uses IBM programming manuals in the new operation.

Presently the 18/30 is being used for scientific and commercial applications such as computer-aided design, engineering and structural calculations, job status reporting, production control and reporting, project planning, etc.

Future plans include the development of a management information system and file interrogation capability that will make use of remote data entry terminals on-line at all times.

User Adds Power, Reduces Cost With Mixed Source Configuration

By a CW Staff Writer

MILWAUKEE, Wis. – By turning to a third-party lease and an independent disk subsystem, American Bankshares Corp.'s data processing center gained additional computer power, increased on-line storage capacity, and at the same time reduced EDP rental charges, according to Bill Kierstead, senior vice-president.

The third-party supplied mainframe is an IBM 360/50 with a 256K byte core memory, while the independent disk subsystem is based on Memorex 3660s and has a total storage capacity of 233M bytes.

Previous equipment consisted of two IBM 360/30s (each with a 65K byte core memory) and mixed 2311 and equivalent Memorex 630 disk drives.

In late 1972, Kierstead began to search for options to the 360/30 based system with two major objectives: increase computer capacity (a must) and reduce total costs (a hoped for objective).

Greyhound set the pace for subsequent bidding with the 360/50 based system. This system, when combined with the Memorex disk subsystem, was bid at $16,000/mo, or half of the alternative of renting the 360/50 with a 2314 disk drive directly from IBM, Kierstead stated.

2314 Too Slow

Even if the prices of the two 360/50 based systems had been identical, access time for the Memorex disk drive configuration is 35 msec., Kierstead said, which represents a substantial improvement compared to the 75 msec access time of the IBM 2314 alternative.

Another option offered by IBM was a 370/135 based system, that while it rented for an equivalent amount to the Greyhound system, did not have the fire power of the 360/50, Kierstead added.

With IBM unable to convince Kierstead of the cash/performance benefits of their offerings, the move was made to the third party configuration.

To date, the decision has been sound, Kierstead said, as total cost savings for computer operations in 1973 (Greyhound system) versus 1972 (two 360/30s) will exceed $75,000.

Performance Stats Up

Additionally, computer throughput has increased by 50%. Disk storage capacity expansion is up from 60M bytes to 233M bytes, and overall average access time improvement is 53%.

"Considering our cost reduction and expansion in CPU memory and disk storage capacity, we anticipate using 360 series equipment for several more years," he added.

American Bankshares' computer is run 132 hours weekly and is used for both in-house applications and for service bureau support of 75 clients, including four company-owned banks and other financial and commercial users.

A major banking application is the on-line use of 22 teller communications terminals for updating and inquiry of more than 90,000 savings accounts over both in-house and leased lines to 11 banks.

Other applications include demand deposit accounting for 70,000 accounts, installment and commercial loans, personal and corporate trust and mortgage loans.

Non-banking service bureau work includes payroll, accounts receivable, production scheduling and general accounting work.

All jobs are performed using DOS and ASAP working in three partitions. Most of the applications were written by an in-house staff, Kierstead added.

Tape System for Minis Uses 3M Data Cartridge

TAMPA, Fla. – The Data Store 6000 is a tape cartridge storage system available from Minicomputer Resources, Inc. for minicomputers that make use of the 3M data cartridge.

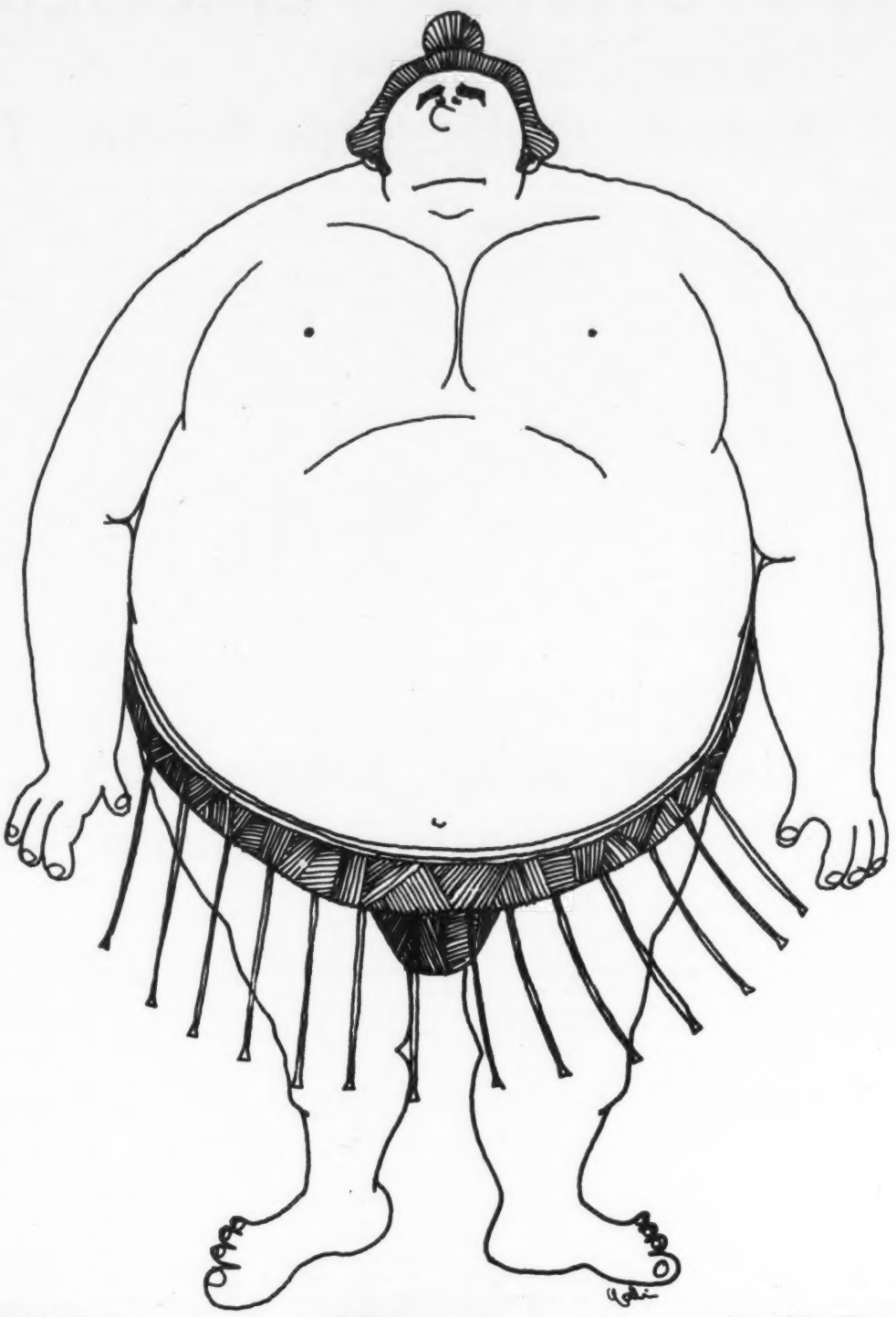
This package includes a controller/formatter and interfaces for most minicomputers, the firm's spokesman said.

Storage capacity is up to 2.8M bytes per cartridge with the controller/formatter handling up to four cartridge drives.

Transfer rate is 6k bytes/sec with programmed data transfers on a word – double buffered 16 or 12 bits – or 8-bit basis.

Data may be stored, written or read in 'blocked' format of fixed or variable length with software provided to allow random access of blocked data.

Single unit price of the Data Store 6000 ranges from $3,600 for controller, interface, power supply cables, software and one cartridge drive, to $7,250 for a complete system with four drives from 3202 Henderson Blvd., 33609.



New heavyweight in the Japanese Computer market:

In Japanese, it's called Shukan Computer.

And in English, it means "Computer Weekly." Whatever you call it, *Computerworld's* new sister publication is an excellent vehicle for selling EDP products and services in the large and expanding Japanese EDP market. Here are some of the reasons why:

- **Shukan Computer** is a joint venture of *Computerworld* and Dempa Publications, the leading Japanese publisher of electronics information services. With the combined resources of the two companies, Shukan has the largest news gathering organization of its kind in the world.
- **Shukan Computer** is the only newsweekly for the fast-growing Japanese computer community.
- Initial circulation is guaranteed at 35,000, divided about 80% to end-users and 20% to the computer industry. Circulation development methods currently under way are the same as those which gave *Computerworld* the highest paid circulation in its field in less than four years.
- Shukan lets you in on the action in the world's fastest growing EDP market. The Japanese Ministry of International Trade and Industry (MITI) has made the following 1976 forecast: 39,000 general-purpose systems installed, up from 11,237 in 1971; 11,000 minicomputers installed, up from 1,670 in 1971; and 3,000 industrial systems installed, up from 1,086 in 1971.
- Is this growth likely? The latest census of general-purpose systems revealed that there were 14,806 systems installed as of September 1972, a one-year gain of 3,569 units and $911 million installed value, a growth of 31.7% and 23.1%, respectively. And more than 50% of these new systems were American made.
- It is true that there are import restrictions. But Japanese vendors and users can get permission to import almost anything they want and need. As a result, 1972 imports were over $360 million.
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Afips Board Predicts

NCC '73 Will Net Income of $308,000

By E. Drake Lundell Jr.
Of the CW Staff

NEW YORK – This year's National Computer Conference (NCC) is expected to produce net income of around $308,000, well above the figure reached for the two shows last year, according to a preliminary report at the Afips board of directors meeting. This money is divided with Afips receiving 60%, IEEE 19%, ACM 16% and the rest to the Simulation Councils, Inc.

On the Afips budget for last year, the society took in $293,000, which was $60,000 over the budget, while expenses were only $3,000 over budget for the year, the report indicated.

Contingency Fund Issue

The group discussed increasing the contingency fund for the national conferences from $50,000 to at least $150,000, but legal counsel pointed out this was a decision for the Joint Computer Conference board and not the Afips board.

However, the Afips board voted to offer to place the first $60,000 it got from this year's conference into the contingency fund if the other societies would also make a contribution amounting to their share of the first $100,000 in NCC revenues.

The board authorized Richard Tanaka, chairman of Afips' international committee, to initiate discussions with the Japanese Computer Society on the possibility of a second U.S.-Japan Computer Conference in 1975.

It also expressed support for the idea of bilateral conferences of this type and suggested that more be planned with other countries.

In considering the new Afips budget for fiscal year 1974, the board narrowly voted down a proposal by Anthony Ralston of ACM that the overall budget be cut by $20,000. However, it seemed to agree with the contention that there was a need to get better control over the costs of individual projects in the future and a better way to allocate costs of headquarters to the various projects.

Societies/ User Groups

Application Workshop Set by IEEE Society

SILVER SPRING, Md. – The Data Acquisition and Control Technical Committee of the IEEE Computer Society is sponsoring Computer Applications Workshop II, featuring on-line computer applications at the Los Alamos Scientific Laboratory, Los Alamos, New Mexico, Aug. 22-24.

Discussion of several computer systems used for on-line data acquisition and control at the Los Alamos Laboratory will be featured during workshop sessions.

Descriptions of the software, interfacing and process instrumentation will be presented.

Further information is available from Dr. Raymond A. Gore, Los Alamos Scientific Laboratory, P.O. Box 1663, Group MP-1, 87544.

NCC Proceedings Available From Afips

MONTVALE, N.J. – The *Proceedings* of the 1973 National Computer Conference and Exposition are available from the American Federation of Information Processing Societies.

Conference Proceedings, Volume 42, contains more than 160 technical papers and abstracts covering topics ranging from performance evaluation and automatic pattern recognition to information networks, associative processors and computer-based integrated design systems.

The price for the volume is $40. A reduced rate of $20 is available for prepaid orders from members of Afips' constituent societies stating their affiliation and membership number.

Afips Press is at 210 Summit Ave., 07645.

COMPUTER INDUSTRY

CI Notes

And Now There Are Two

CW West Coast Bureau

SACRAMENTO, Calif. – What started out as a field of 12 firms ready to bid on the state's first $40 million consolidated EDP center has dwindled to two firms.

Only Honeywell and IBM still intend to bid for the Stephen P. Teale center, following Control Data Corp.'s decision to back off.

The legislature has specified that the bids for the center must include at least two bidders and unless two different mainframes are proposed bids will be thrown out.

In deciding not to bid the big project, a CDC official said a benchmark test requirement would be too costly and "unreasonably severe from the standpoint of showing ability to perform."

IBM Theft Pleas Entered

SAN JOSE – Three of the five defendants arraigned last week in municipal court here on charges connected with the alleged theft of IBM design secrets [CW, July 11] pleaded not guilty. The cases of the two others, Ramon Serrata and Philip Kronzer, were continued until July 18 and 20 for entry of plea.

Pleading not guilty were Philip Steckel, Adolph Jarmann and David Bunch. Arraignments for the others will also be held this week.

A public defender was appointed for Serrata, an IBM employee.

Mini Printers May Boom

NEW YORK – The shipments of low-cost computer printers and teleprinters as part of minicomputers could reach boom proportions by 1974, a panel told investment analysts recently.

The panel, which included Robert Howard of Centronics, Frederick Adler of Data General Corp., Frederick Carroll of Sanders Associates, William Gannon of Modern Data and Stephen Ujvarosy of Teletype Corp., stated that low-cost printers are becoming increasingly important items in the business of data processing and communications, since "we are still a paper-bound society that is getting more automated."

The panel was held by Danes Cooke and Keleher, Inc., an investment firm.

U.S. DP Firms Show in Mexico

MEXICO CITY – About 20 U.S. DP firms will be exhibiting here July 24-27 at the International Computer Exposition for Latin America at the Hotel Maria Isabel Sheraton.

The conference, sponsored by the Mexican Computing Society, will focus on standards and norms. Seymour A. Robbins & Associates, 273 Merrison St., Teaneck, N.J., is the local contact.

Supershorts

Varian Data Machines has appointed Showa Information Systems, Tokyo, as its distributor in Japan and South Korea.

– – –

California Computer Products, Inc. has received over 170 orders for its Model 936 drum plotter.

– – –

General Computer Service, Inc., El Paso, Texas has agreed to license its Direct Dial Data Service to Datacrown Ltd., Toronto.

– – –

Optical Recognition Systems, Inc. said it has won a patent infringement suit brought by Lundy Electronics and Systems, Inc. involving use of character recognition systems and techniques for processing bank checks and other data.

– – –

Compuscan, Inc. has named Auto-Grafica International Corp. as distributor for its optical page reader in South America south of Panama.

During Third Quarter

Documents Show IBM Plans 370/145 MP

By E. Drake Lundell Jr.
Of the CW Staff

TULSA, Okla. – IBM will announce a multiprocessing version of the 370/145 during the third quarter of this year, according to documents released here in the Telex-IBM antitrust action.

The 145 multiprocessing machine will join the 155 and 165 multiprocessing units as well as the earlier 360/65 and 67 multiprocessing devices

The multiprocessing systems are seen to some degree as "alternatives" for users who don't want to get involved with virtual systems, the IBM documents show.

The multiprocessing (MP) features also give users "improved system availablility over a simplex system with increased throughput and optimization of systems resources."

The objective of the 145 multiprocessor, according to the IBM documents, "is to provide a tightly coupled, shared storage, single supervisor type MP system at approximately the same price as duplexed 145s (two simplex 145s with the same total storage) and to further exploit the advantages of relocate and sensor base by providing support (under AOS-2) to these functions. The result would be a low-entry MP system in a compatible line of S/370 Multiprocessors."

In addition, the IBM researchers indicated that "multiprocessing, as a field upgradeable feature on the Model 145, will increase IBM's penetration of Net Computing Potential in the marketplace while providing high gross/net revenues."

According to the hardware description in the IBM documents, the "Model 145 Multiprocessor will be a symmetrical dual processor, shared storage, shared I/O, single supervisor, single job queue system.

Sharing Main Storage

"The major physical characteristics are the sharing of main storage and part or all of the I/O units by two like 145 processors. Each processor can address all locations in main storage. Access to the I/O devices from each processor may be accomplished via program-supported I/O interface and device-switching techniques as well as asymmetric access from only one processor.

"The entire multisystem operation may be controlled from any operator's console attached to either of the two processors," the documents stated.

However, to have a 145 multiprocessor, the user will need to have some Hierarchical Memory Systems memory as the shared main storage between the two processors.

The system will have a configuration control panel for physical reconfiguration and partitioning such as storage allocation, floating storage addressing; prefixing; I/O control unit enable/disable and mode control.

"Each 145 CPU in an MP configuration can retain its announced standard and optional feature capability including 64K of reloadable control storage but excluding main memory storage up to 256K," the documents said.

To make the system work an "MP Feature and storage attachment unit will be developed," the documents said. "The MP feature box will allow each CPU to attach and to address all increments of main storage.

"One Memory Control Unit (MCU) per CPU, and one storage attachment per memory box is required . . . that will allow memory configurations of 2, 3 and 4 boxes with increments at 1 MB, 1.5 MB and 2 MB. Also contained in this box will be the twin tailing, storage protection, a configuration control panel and a CE [Customer Engineer] panel."

Part or all of the I/O will be shared by the MP configuration, either through device switches, two-channel switch features or two processor features on control units.

"The Model 145 Multiprocessor, like the 155 and 165 Multiprocessors, will be supported under OS/MVT and AOS-2 [VS-2]," according to the documents. For OS/MVT, the Siesta support for the 360/65 multiprocessing version will be expanded to include the 370 machines and will include: a single supervisor, single job queue, single task queue which treats each processor as an allocatable resource; logical reconfiguration of processors, main storage, channels and devices; interprocessor communication via malfunction signaling and "shoulder tapping"; a CPU Locking Procedure and Recovery Management Support.

In the category of performance, the IBM pre-announcement document for the 145 Multiprocessor noted that the unit "is expected to have an average thruput (sic) of 1.3 to 1.8 times its respective simplex system (having a reasonable configuration with half the I/O complement and half the storage of the MP system) executing the standard commercial and scientific job mixes.

"Increased performance should be realized in higher CPU utilization over a comparable uniprocessor primarily due to the additional task switching which occurs in a two-CPU configuration. The additional storage itself, due to only one control program in a shared storage MP environment, should allow one additional initiator."

A typical 145 multiprocessing system with 1M byte of HMS memory and a full complement of peripheral equipment will rent for around $70,454 monthly, according to the pre-announcement plans.

The CPUs and channels and memory alone would cost around $38,290 monthly, the document said, not counting the peripheral devices.

Memorex to Jettison Mainframes; Large Singer Investment Discussed

SANTA CLARA, Calif. – Memorex Corp. has revealed it plans to jettison its mainframe effort and it is discussing with Singer Co. turning over majority control to Singer in return for a $15 million investment.

Memorex also indicated in a lengthy press release that it anticipates several writeoffs this year that could amount to about $85 million.

Singer would not be acquiring any of Memorex's debt under the arrangement.

$40 Million Writeoff

The decision to discontinue its computer systems products program will invove a writeoff of assets estimated at $40 million, Memorex said.

Under the terms being discussed by the two firms, Singer would invest $15 million in exchange for equity securities which would have a majority vote and provide it with the right to obtain a majority of Memorex common.

A Singer spokesman said the Memorex release "reflects accurately" Singer's position.

The agreement is contingent upon several conditions, including making arrangements with creditors which would lead to conversion of some of its senior debt to preferred stock and the adjustment of principal and interest payments, as well as approval by both boards and Memorex's shareholders.

If the discussions with Singer are successful, Memorex's principal bank, Bank of America, has agreed to convert a portion of its Memorex debt to preferred stock, and similar requests are being made of creditors of ILC Peripherals Leasing Corp., a Memorex subsidiary, and other bank lenders, Memorex said.

These conversions, together with the $15 million from Singer, would give Memorex a positive tangible net worth, Memorex said, despite the writeoffs.

In addition to the $40 million writeoff on its mainframe efforts, the firm said it may revalue other leasing business assets which could result in mid-year writeoffs estimated at $10 million.

Memorex will also review its deferral accounting policy to determine whether it should terminate deferral accounting for research and development cost and lease acquisition cost. A change in this policy would amount to an additional writeoff of about $35 million, the firm said.

In the meantime, the New York Stock Exchange has halted trading on Memorex Corp. securities pending a review of its average net income over the past three years and its net tangible assets, to see if they satisfy the board's eligibility requirements for listing.

Big board standards require listed firms to average at least $600,000 in earnings over the past three years and a minimum of $8 million in net tangible assets.

Philips Joins CII and Siemens

PARIS – After keeping its prospective partners waiting for some time, NV Philips Gloeilampen Fabrieken has joined with the French Compagnie Internationale pour l'Informatique and Siemens AG in an attempt to form a European computer firm capable of competing with U.S.-based firms.

The agreement covers the joint production and marketing of a range of computers and calls for the formation of a new company called Unidata.

The venture is designed to offer a "common, fully compatible and new range of products," the firms said.

In the initial phases of the agreement between CII and Siemens [CW, March 21], Siemens assumed control of CII operations in Germany, and CII of Siemens operation in France.

Under the new three-party agreement, a joint holding company will control all of the marketing operations of the three companies in foreign countries, but each firm will control 80% of the marketing services of the three companies in its own national territory, according to sources.

Furthermore, three new units, a French, German and Dutch, will be formed for command and planning activities, each of them holding 33% in each of the three common units.

"Continuity of the present ranges, including the CII Iris, the Philips P1000 and P350, and the Siemens 4004, and associated equipment and services will be maintained," the companies said.

Each company is expected to be responsible for production of a certain area of the product line, and sell its products to the jointly owned distribution network.

The name Unidata was acquired "for a substantial consideration" from a firm that is now called Ventek, Ltd.

Foreign Orders & Installations

Daimler-Benz, West German automobile manufacturer, has ordered, for lease, an Input 80 Model C page reader and key-to-disk system from Recognition Equipment. The system will be used to process sales control and warranty claim records.

Air Canada has purchased a third Univac 1108 computer and additional drum storage capacity for its Reservec II reservations system.

The Hong Kong Shanghai Bank, Hong Kong, has installed a 16-station GCS 2100 system manufactured by General Computer Systems.

Nova Scotia Power Corp. has installed a Univac 9400 system for processing customer accounts.

Australian Paper Manufacturers, Ltd., Queensland, has purchased a Measurex Series 1000/Model 85 control system, for application to the inverform papermaking process.

The Spanish Social Security System has ordered a Univac 1106 for updating of medical records and administrative applications.

The Italian Government, Ministry of Defense, has ordered an Arts II automated air traffic control system from Lockheed Electronics Co., Inc.

Cedar Holdings, Ltd., a British banking firm, has ordered a second NCR Century 200. The system will handle current, loan and deposit accounting for all London branches and the Glasgow, Scotland, office.

Australian Mutual Provident Society, an insurance company, has ordered a Univac 1110 to serve as the core of a data communication network covering Australia and New Zealand.

The Korea Exchange Bank is installing an NCR on-line computer network, linking NCR "42" data terminals in branch banks with an NCR Century 200 in Seoul.

IBM Placing Australian Orders

Special to Computerworld

SYDNEY, Australia – IBM Australia is stepping up its local procurement efforts here. Order contracts for at least three local computer component makers are well advanced, the firm announced.

IBM's decision to buy Australian-made components is seen by competitors as a ploy to cement relations with the Australian Government and gain a big slice of upcoming government computer contracts.

IBM Australia has let a tooling contract to Hallam Magnetics, part of the Kempthorne-Mistral group, for two electrical solenoids. Twenty samples have been airfreighted by IBM Australia to its Rochester, Minn., plant for testing.

Betts and Co., Milperra, Sydney, is shipping two sample electric motors to the IBM plant in Mainz, W. Germany, for testing. The units are intended for use in the manufacturing of the System 360.

IBM Australia is also examining financial evaluations from two local manufacturers for 26 items of transformers or filter chokes, requested by the IBM plant in Kingston, N.Y.

IBM Australia has also received requests from Rochester, N.Y., for sheet metal covers for a new computer model and various diecasting jobs from another plant.

Self-Sufficiency Australian Goal

Special to Computerworld

CANBERRA, Australia – Australia is determined to be self-sufficient in its principal industries, including computers and telecommunications, according to Prime Minister E. Gough Whitlam.

"We want to establish basic industries in Australia for which we know there will always be a demand by the Australian Government or Australian companies. I am not going to assume that Australian defense industries are inefficient," he said.

The government has made it clear to computer manufacturers that in tendering for government contracts, preference will be given to those manufacturers that place offset orders with the Australian industry or undertake to encourage higher local content in government-ordered computers.

Inforex Sets Sights on UK As Big Near-Term Challenge

BURLINGTON, Mass. – "The United Kingdom is our biggest challenge for the near term . . . it's an uphill battle," commented Fritz Kern, director of European marketing for Inforex.

Kern said the data entry firm is second or third in most European marketplaces, but it ranks fifth in the UK, behind CMC, General Computer Systems, Entrex and Mohawk.

Each European country maintains its nationalistic characteristics, despite the Common Market, Kern added.

For this reason, Inforex has six subsidiaries in Europe to deal with the different markets.

Univac-ISS Deal Could Affect OEMs

BLUE BELL, Pa. – No immediate change in Univac's OEM memory purchasing practices is expected as a result of its proposed purchase of Itel Corp.'s Information Storage Systems subsidiary, according to Univac.

But the long-term effects on some OEM suppliers to Univac could be more severe, acknowledged California Computer Products, Inc., which OEMs disk units to Univac.

Although Calcomp President Lester K. Kilpatrick said he does not anticipate any appreciable short-term effect on its sales to Univac, after the coming year shipments to Univac are expected to continue but probably at "a significantly reduced rate," he said.

In the near term, however, "existing orders and newly indicated contract additions by Univac to Calcomp are expected to result in significantly increased deliveries by Calcomp to Univac during the coming year," Kilpatrick added.

A Univac spokesman noted: "In acquiring ISS, we do not expect that there will be any immediate effect or change regarding marketing agreements with other companies or our current production of memory products.

"The growing demand for Univac systems worldwide and the consequent demand for peripherals for those systems is reinforcing the need for maximum utilization of our internal development and productive capacity as well as the added capability which ISS and other external sources can provide."

He declined to specify what percentage of production is expected to come from ISS, but did acknowledge that some modifications of ISS products would be necessary.

Gary Friedman, president of the Data Products Group at Itel, said Itel has not decided how to allocate the funds it will receive from Univac. He did say that Itel was not looking to purchase more 360s for its lease base.

IBM Seeking to Prevent Diagnostics Use by Plug-Compatible Makers

TULSA, Okla. – As plug-compatible peripheral makers have been to some extent able to use IBM diagnostics to exercise their systems, IBM is studying ways to make its diagnostics harder to use, according to documents released during the IBM/Telex trial.

First, the firm noted there were "legal reasons for furnishing to purchasers and other maintainers" of IBM equipment the necessary diagnostics, so there was little chance of keeping the diagnostics away from plug-compatible manufacturers.

Therefore other strategies were called for.

One was to rely more on its On-Line Test Executive Program (Oltep) as a diagnostic aid for user and CE use, thus making it possible to put less and less in the on-site diagnostic routines.

Another recommendation was to provide diagnostics "requiring complementary hardware diagnostic capability for operation," according to the documents, and to develop "special-purpose diagnostics which are not generally available in the field, but can be utilized remotely, maintained under IBM control."

A further recommendation would be to develop a handshaking capability in the diagnostic systems and the hardware in order to preclude the use of the diagnostics on other than IBM machines, the papers said.

A final option being considered would be the licensing of diagnostic routines for a fee on a paper copy basis, according to the documents.

Leasco Says DP Leasing Profitable

NEW YORK – Although several computer lessors have chosen to write down the value of their IBM 360 portfolios, Leasco Corp. has reiterated its determination not to follow this course.

In a meeting of the New York Society of Security Analysts, President Saul P. Steinberg told the group that Leasco's "computer leasing is profitable, and we expect it to continue to be profitable.

"There isn't any financial or cash risk to Leasco's total operations from this business," he said.

Steinberg provided some figures on the computer operation. "Real cash flow," after all expenses, from computer leasing "exceeds $1 million per month" and leasing provided $2.4 million in pretax profit and $16 million in revenue in this year's first quarter, he said.

Leasco has no difficulty keeping its equipment on lease, Steinberg said.

Contracts

Techtran Industries, Inc., Rochester, N.Y., has received a contract from the Communications Division of Dedmon Industries for its Models 4100 and 4200 cassette communications terminals.

American Management Systems, Inc. has been awarded a contract by the American Association of Museums to develop and operate computer-based membership and accounting systems.

Electrospace Corp., Westbury, N.Y., has signed a contract with National Transactions Network, Inc. to furnish 2,200 "Insta-tran II" data terminals for use in a computer-controlled check-cashing system.

Electronic Associates, Inc. has been awarded a contract by the U.S. Army Missile Command to furnish large-scale, special-purpose Pacer hybrid computer systems, a Pacer 100 digital computer, and associated peripherals and software packages for use in the Army's Advanced Simulation Facility.

Shared Medical Systems Corp. has signed contracts with nine hospitals nationwide to provide them with data communications programs, including a computerized financial management system.

Pillow Talk for $3.96/Hr

T/S Firm Begins in Bedroom

By Michael Merritt
Special to Computerworld

MOUNTAIN VIEW, Calif. – Alex Kamradt started out with a time-sharing business in his bedroom. The zoning board of Mountain View didn't like that. So now he has an outside office for his customers – but the computer's still in the bedroom.

Alex Kamradt, plus a secretary, a programmer and a Basic Time-Sharing 3000 minicomputer make up Call Computer, a time-sharing outfit that sells computer time for $3.96/hr (99 cents from midnight to 6 a.m.) to about 150 clients in the Bay area. He started business in December 1971, by himself, and said he is now "about breaking even" with his payroll of two.

The BTS 3000 is a reworked Hewlett-Packard mini with 24K 16-bit words and seven 2.4M word disks. The machine can currently handle 16 users simultaneously with a two to three second response time, and Kamradt said he is considering adding eight more ports and additional core.

Kamradt came to his business by a roundabout route. An operations research specialist, Kamradt was laid off in the late 1960s, along with quite a few other high technologists in the Bay area. He got a government grant to do some work at Stanford, and in his spare time helped East Palo Alto High School program and develop an HP mini it had for student teaching.

One of the Kamradt's more successful suggestions was that the high school sell time on its mini to help defray the costs of supplies.

The idea was so successful that commercial time-sharing houses began complaining that this was a rather inappropriate activity for a public school. The high school stopped selling time, but Kamradt recognized the possibilities.

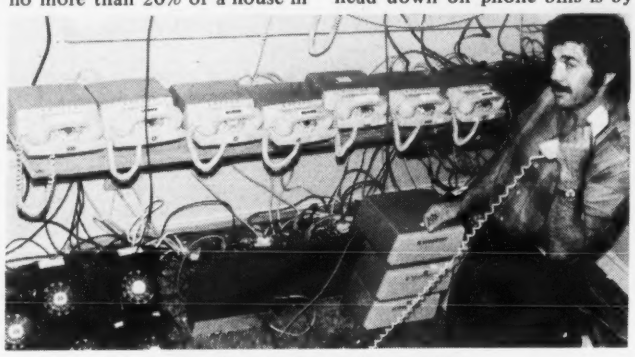
So he went to a bank to get the money for his own computer. He said the bank was fairly open to the idea primarily because he had sufficient personal assets to back up the loan. All in all, he figured, it cost about $100,000 to set up the venture.

He started out at the end of 1971 with 15 customers – mainly former high school clients. Since then his roster has multiplied tenfold, helped by the acquisition of the customer base of another time-sharing company that went bankrupt. He said his revenues are now about $10,000/mo.

Call Computer's clients are mostly technical types with enough computer experience to do their own programming, Kamradt said, since he does not provide programming assistance. One feature he does offer, though, is a commodities data base that has attracted quite a number of commodities speculators. Rate for use of the commodities package is $13.05/hr.

Kamradt started out with the mini, the disks and the modems in the bedroom of his house. The bedroom was sealed and air conditioned, and Kamradt, who was recently divorced, slept in the garage. Clients would come in and use a teletypewriter in his home, or dial in with their own units.

It took a little over a year for the zoning laws to curtail this low overhead operation. According to the Mountain View code, no more than 20% of a house in a residential district can be used for commercial purposes. So Kamradt now has a regular outside office equipped with a few TTYs, but still keeps the computer at home.

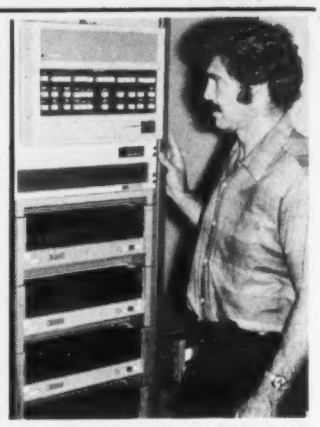

For those in the modem market . . .

The system crashes occasionally, Kamradt said, but is generally up in two to three minutes. The BTS plant is only a few minutes away from his home, so when he runs into a bug he can't handle, "I just call them up and they tell me what to do." If that doesn't solve the problem, a BTS engineer is over in five minutes.

The major headache, especially at the outset, was telephone service, Kamradt said. "It's hard to get Pacific Telephone to pay you any attention when there are foreign devices connected to the line; they say the problem is in the foreign equipment," he noted. "So I always keep at least one 103A (a phone company data set), and if there's a problem, hook up to that. That way the phone company can't point its finger at the foreign attachments."

He also said the phone company data adapter limits signal strength for foreign attachments to a level lower than that used by Bell equipment, so that all foreign attachments automatically have a signal-to-noise ratio disadvantage.

Another way he keeps overhead down on phone bills is by using residential wide-area service, which costs $30/mo, rather than an identical business service that costs $200/mo.


CW Photos by Michael Merritt
Alex Kamradt checks out his "roommate."

Call Computer's customers, though mostly technology professionals, have been using the system for extracurricular attempts to "dope out the horses," and play the stock market and the commodities market.

Brokers Cancel Merger Plans

NEW YORK – Amid the current profit crunch on brokerage houses, there has been much talk of combining back office operating functions.

One such plan, between Harris, Upham & Co. and Shearson, Hammill & Co., has fallen through, "basically because of accounting and legal entanglements that arose," according to Harris Upham executive vice-president Jerome H.P. Boucher.

The plan would have combined order processing and customer accounting functions of the two firms under a separate, jointly owned operating company.

"The idea was to combine data processing functions for greater efficiency for both sides," President Henry Harris Jr. added.

Income-producing activities, such as securities sales, would have remained under the individual firms.

However, Shields & Co. is still proceeding on its plan to organize a merging of its securities processing and related operations with those of at least five other firms.

Merrill Lynch Shelves IBM Order For CRT Terminals for Its Brokers

NEW YORK – Merrill, Lynch, Pierce, Fenner & Smith, Inc. has shelved a 1971 project to put some 3,896 IBM information display units on the desks of its stockbrokers.

The decision to shelve the project, according to a Merrill Lynch spokesman, is the result of IBM's announcement of its new retrieval device and the number of other new equipment developments from other manufacturers which have appeared since August of 1971.

At present, Merrill Lynch is looking at several different units, all of which would perform many of the functions that the IBM machine would have served, the spokesman said.

"As of right now," the Merrill Lynch spokesman said, "we're concentrating on a device that would go into the operations area of a brokerage office. This system would result in fewer retrieval devices than one on every desk."

He declined to mention the manufacturer under consideration, but said a decision should be made sometime later this year.

POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS | POSITION ANNOUNCEMENTS

ADMINISTRATIVE ASSISTANT

The State University College of Arts & Science at Geneseo is seeking an Administrative Assistant to aid in the computerized support activities of college functions. Applicant must have at least one year experience in COBOL language preferably in a college environment. Knowledge of B-3500 software would be advantageous. Individual will be responsible to the Data Processing Manager for developing, implementing and documenting administrative support functions with the ultimate goal being a total College Management Information System. Geneseo has a rural environment with approximately 5000 students and 300 faculty members. Geneseo is an Equal Opportunity Affirmative Action Employer. Salary will be in the range of $9,000 — $10,000 depending on qualifications and experience. Applicant should send 1) Personal Vita 2) three letters of recommendation 3) transcripts of all collegiate level work to Carl Kellogg, Acting Director of Computer Center, State University College of Arts & Science, Geneseo, New York 14454. Deadline for application: 20 July, 1973.

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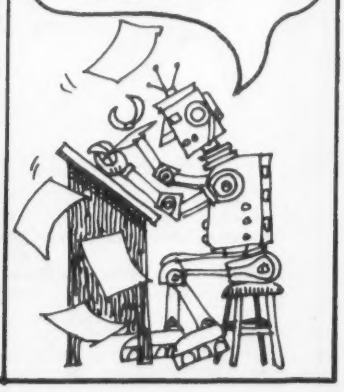

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OEM Memories for Minis Up

Cambridge Nine-Month Earnings Triple

CONCORD, Mass. – Cambridge Memories, Inc.'s earnings in the third quarter ended May 31 doubled and for the nine months more than tripled.

Both revenues and income before tax credits for the nine months have already doubled the full 1972 fiscal year performance, President Joseph F. Kruy observed.

While shipments of add-on memories for IBM 370 and 360 machines continued strong during the third quarter, a "significant contributor to both revenues and earnings in the period was the sharply increased shipments of OEM products used mainly in minicomputers," according to Kruy.

The firm will introduce several new products, beginning next month and continuing through the next year, Kruy added.

In the third quarter, earnings totaled $167,194 or 13 cents a share compared with $81,689 or 8 cents a share, including a $41,729 tax credit.

Revenues during the period rose to $3.6 million from $1.1 million.

The nine-month picture was equally robust, with earnings, including a $62,880 tax credit, rising to $425,682 or 33 cents a share compared with $129,546 or 13 cents a share including a $64,700 tax credit.

Fabri-Tek Shows Year Turnaround, End User Business a 'Large Segment'

MINNEAPOLIS – With a jump in revenues and some help from special credits, Fabri-Tek, Inc. reported a turnaround in its results for the year ended March 30.

Earnings totaled $919,731 or 28 cents a share compared with a loss of $672,514 or 21 cents a share a year ago.

The end-user business of extension memories for 360s in 1973 "represented a large segment of our total business. We are expanding our line of end-user products and expect this area to continue to grow," President L.D. Altman commented. "The OEM core memory business continues to be an important segment of our market," he added.

Special credits, including a tax credit of $556,000, totaled $625,998 for 1973, compared with $2.1 million in 1972.

Revenues for the year rose to $22.3 million from $13.6 million last year.

In the fourth quarter, earnings totaled $413,702 or 13 cents a share compared with a loss of $1.3 million or 41 cents a share in the year-ago period. Revenues rose to $6.6 million compared with $3.8 million in the same 1972 period.

CIG Earnings Tumble Below Those of '72

STAMFORD, Conn. – Increased depreciation of its IBM 360 lease portfolio and a reserve on venture capital investments in affiliates helped drag Computer Investors Group, Inc.'s earnings for the year ended March 31 below those of a year ago.

Although revenues rose 23% to $17.2 million compared with $13.9 million, earnings totaled $332,000 or 19 cents a share compared with $2.1 million or $1.03 a share last year.

The firm took an additional depreciation of $860,000 on its 360 lease portfolio, and a $500,000 provision for estimated loss of investments.

Earnings Reports

RAPIDATA
Three Months Ended March 31

	1973	1972
Shr Ernd	$.16	a$.10
Revenue	2,304,530	1,703,766
Earnings	291,383	188,359

a-Adjusted to reflect a two-for-one stock split paid in August 1972.

AUTOMATIC DATA PROCESSING
Nine Months Ended March 31

	1973	a1972
Shr Ernd	$.93	$.63
Revenue	64,976,000	51,994,000
Earnings	5,634,000	3,746,000

a-Restated for pooling-of-interest.

GENERAL DATACOMM
Six Months Ended March 31

	1973	1972
Shr Ernd	$.20	$.15
Revenue	3,149,845	2,218,980
Tax Cred	143,000	86,000
Earnings	298,444	179,305

MILGO ELECTRONIC
Three Months Ended March 31

	1973	1972
Shr Ernd	$.49	$.30
Revenue	5,329,000	3,080,000
Earnings	787,000	481,000
6 Mo Shr	.93	.53
Revenue	10,104,000	5,464,000
Earnings	1,491,000	851,000

BRANDON APPLIED SYSTEMS
Year Ended Feb. 28

	a1973	1972
Shr Ernd	$.01	.....
Revenue	2,333,949	$1,339,818
Earnings	42,401	(2,655)

a-Includes results of Rand Teleprocessing Corp. acquired on pooling-of-interests basis during the year.

NASHUA
Three Months Ended March 30

	1973	a1972
Shr Ernd	$.56	$.43
Revenue	48,115,000	39,411,000
Earnings	2,540,000	1,952,000

a-Restated to include an acquisition on a pooling-of-interests basis.

INFORMATION MAGNETICS
Three Months Ended March 31

	1973	1972
aShr Ernd	$.09	$.08
Revenue	3,448,374	997,130
Earnings	120,287	59,394

a-On a primary basis.

TECHNITROL
Three Months Ended March 31

	1973	1972
Shr Ernd	$.05	$.03
Revenue	2,382,488	1,265,487
Spec Cred	.....	a29,060
Earnings	70,437	39,739

a-Gain on sale of subsidiary and plant.

ELECTRONIC ASSISTANCE
Year Ended Jan. 31

	1973	1972
Shr Ernd	$.15	$.18
Revenue	38,672,000	36,741,000
Spec Cred	19,000	20,000
Earnings	288,000	341,000

ON-LINE SYSTEMS INC.
Year Ended April 30

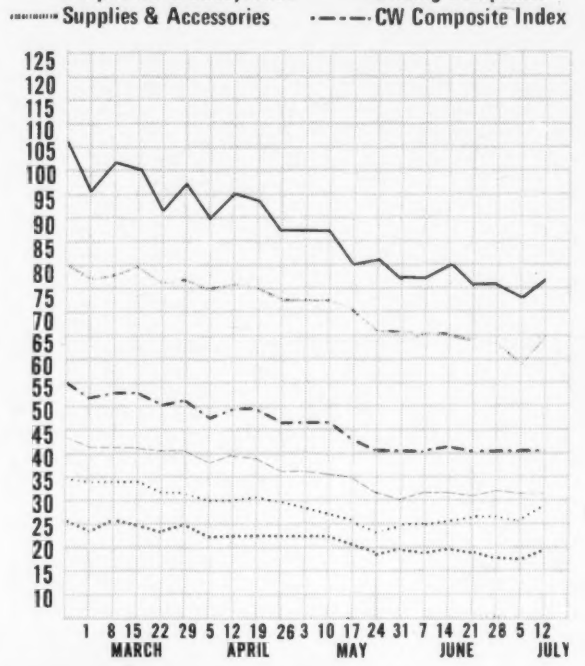
	1973	1972
Shr Ernd	$.87	a$.32
Revenue	6,303,146	3,524,998
Earnings	692,979	231,671

a-Adjusted to reflect a three-for-two stock split in March 1973.

ADVANCED COMPUTER TECHNIQUES
Year Ended March 31

	1973	1972
Shr Ernd	$.16	.....
Revenue	3,720,157	$2,530,309
Earnings	124,202	(97,523)

COMPUTERWORLD Computer Stocks Trading Indexes



TRADE*QUOTES

Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

EXCH		1973 RANGE (1)	CLOSE JUL 12 1973	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 2	1 3/4	+ 1/4	+16.6
A	APPLIED DATA RES.	2- 4	1 7/8	+ 1/8	+7.1
O	APPLIED LOGIC	1- 3	1 1/8	- 1/8	-10.0
N	AUTOMATIC DATA PROC	39- 94	44 1/2	+3 3/4	+9.2
O	BRANDON APPLIED SYST	1- 1	1/4	0	0.0
O	CENTRAL DATA SYSTEMS	8- 9	7 1/2	0	0.0
O	COMPUTER DIMENSIONS	2- 5	2 3/4	0	0.0
O	COMPUTER DYNAMICS	1- 2	5/8	0	0.0
O	COMPUTER HORIZONS	1- 6	2	+ 1/2	+33.3
O	COMPUTER NETWORK	1- 5	1 1/8	- 1/8	-10.0
N	COMPUTER SCIENCES	2- 6	3 3/8	0	0.0
O	COMPUTER TASK GROUP	1- 2	1 1/2	0	0.0
O	COMPUTER TECHNOLOGY	1- 3	1	0	0.0
O	COMPUTER USAGE	4- 9	5 1/8	0	0.0
O	COMRESS	1- 2	1/4	0	0.0
O	COMSHARE	4- 9	4	- 1/8	-3.0
N	CONDUHA CORP	5- 15	5 3/8	+ 3/4	+16.2
O	CYBERMATICS INC	1- 3	1 5/8	0	0.0
O	DATATAB	2- 4	1 3/4	0	0.0
A	ELECT COMP PROG	1- 2	1 3/4	+ 1/4	+16.6
N	ELECTRONIC DATA SYS.	29- 56	34 1/2	+2 1/2	+7.8
O	INFONATIONAL INC	1- 2	3/8	0	0.0
O	INFORMATICS	2- 6	3 1/4	- 1/4	-7.1
O	I.O.A. DATA CORP	1- 1	3/4	0	0.0
O	IPS COMPUTER MARKET.	1- 5	1 1/8	0	0.0
O	KEANE ASSOCIATES	3- 4	3	0	0.0
O	KEYDATA CORP	6- 12	5 3/4	- 1/4	-4.1
O	LOGICON	4- 7	3 3/8	- 3/8	-10.0
A	MANAGEMENT DATA	2- 5	1 7/8	0	0.0
O	NATIONAL CSS INC	8- 41	25 1/2	+2	+8.5
O	NATIONAL COMPUTER CO	1- 1	1/2	0	0.0
O	NATIONAL INFO SRVCS	1- 2	1/2	- 1/4	-33.3
P	ON LINE SYSTEMS INC	12- 17	12	0	0.0
N	PLANNING RESEARCH	2- 7	2 5/8	+ 3/8	+16.6
O	PROGRAMMING METHODS	21- 24	23	+2	+9.5
O	PROGRAMMING & SYS	1- 1	5/8	0	0.0
O	RAPIDATA INC	5- 24	5 1/4	+ 1/8	+2.4
O	SCIENTIFIC COMPUTERS	1- 3	3/4	- 1/8	-14.2
O	SIMPLICITY COMPUTER	2- 4	1 7/8	0	0.0
O	TBS COMPUTER CENTERS	2- 4	1 3/4	- 3/4	-30.0
O	TCC INC	1- 1	1/2	0	0.0
O	TYMSHARE INC	6- 12	7 7/8	+ 3/8	+5.0
O	UNITED DATA CENTER	4- 6	4	+ 1/4	+6.6
N	UNIVERSITY COMPUTING	4- 11	4 1/2	0	0.0
A	URS SYSTEMS	4- 8	4	+ 3/8	+10.3
	PERIPHERALS & SUBSYSTEMS				
N	ADDRESSOGRAPH-MULT	12- 34	14 3/4	+1 3/4	+13.4
O	ADVANCED MEMORY SYS	5- 23	4 3/4	- 1/4	-5.0
N	AMPEX CORP	4- 7	4 7/8	+ 3/8	+8.3
O	ANDERSON JACOBSON	3- 6	3 1/4	0	0.0
O	BEEHIVE MEDICAL ELEC	6- 10	6 1/2	0	0.0
A	BOLT,BERANEK & NEW	6- 12	6 3/4	+ 5/8	+10.2
N	BUNKER-RAMO	6- 18	10 5/8	+ 3/4	+7.5
A	CALCOMP	5- 13	7 1/2	+ 1/8	+1.6
O	CAMBRIDGE MEMORIES	8- 15	8 1/4	+ 1/4	+3.1
O	CENTRONICS DATA COMP	13- 28	20 3/4	+4 3/4	+29.6
O	CODEX CORP	9- 19	10 3/4	+ 1/4	+2.3
O	COGNITRONICS	1- 3	1 3/4	+ 1/8	+7.6
O	COMPUTER COMMUN.	1- 4	1	0	0.0
A	COMPUTER EQUIPMENT	2- 3	2 1/4	+ 1/8	+5.8
O	COMPUTER MACHINERY	5- 13	5 1/2	+ 1/4	+4.7
O	COMPUTER TRANSCEIVER	1- 6	1 3/8	+ 1/4	+22.2
N	CONRAC CORP	15- 32	16 5/8	+1 3/8	+9.0
O	DATA ACCESS SYSTEMS	1- 3	1 5/8	+ 3/8	+30.0
O	DATA 100	9- 18	12 1/4	+3	+32.4
A	DATA PRODUCTS CORP	2- 4	3	+ 1/8	+4.3
O	DATA RECOGNITION	2- 3	1 1/2	0	0.0
O	DATA TECHNOLOGY	2- 5	2 1/4	+ 3/4	+50.0
O	DECISION DATA COMPUT	8- 40	8 1/8	+ 3/8	+4.8
O	DELTA DATA SYSTEMS	1- 1	1/8	0	0.0
O	DIAN CONTROLS	2- 4	1 3/4	- 1/4	-12.5
N	ELECTRONIC M & M	3- 6	3 1/2	+ 3/8	+12.0
O	FABRI-TEK	2- 5	2 1/2	+ 1/8	+5.2
O	GENERAL COMPUTER SYS	5- 9	6	+ 3/4	+14.2
N	GENERAL ELECTRIC	56- 76	59 1/8	+2 5/8	+4.6
N	HAZELTINE CORP	5- 9	5	+ 1/8	+2.5
O	INFOREX INC	5- 23	6 7/8	+1 5/8	+30.9
O	INFORMATION DISPLAYS	1- 2	5/8	0	0.0
O	INFORMATION INTL INC	10- 15	10	0	0.0
A	LUNDY ELECTRONICS	3- 9	3 3/8	+ 1/8	+3.8
O	MANAGEMENT ASSIST	1- 1	1/4	0	0.0
A	MILGO ELECTRONICS	14- 28	15 1/4	+ 5/8	+4.2
N	MOHAWK DATA SCI	4- 13	4 5/8	+ 1/2	+12.1
O	ODEC COMPUTER SYST.	2- 6	2	0	0.0
O	OPTICAL SCANNING	2- 7	3 1/4	+ 1/2	+18.1
O	PENTEC CORP	5- 8	5 1/4	+ 1/8	+2.4
O	PHOTON	3- 7	3 3/4	0	0.0
A	POTTER INSTRUMENT	3- 9	3 5/8	- 1/8	-3.3
O	PRECISION INST.	2- 6	2 3/4	0	0.0
O	QUANTOR CORP	6- 10	6 3/4	- 3/4	-10.0
O	RECOGNITION EQUIP	4- 8	3 7/8	+ 1/4	+6.8
N	SANDERS ASSOCIATES	7- 18	8	+ 3/4	+10.3
O	SCAN DATA	1- 6	1 3/8	0	0.0
O	STORAGE TECHNOLOGY	11- 34	14 3/4	+4 1/4	+40.4
O	SYCOR INC	9- 14	10 1/4	+ 1/4	+2.5
O	TALLY CORP.	2- 14	3 3/4	+1 1/8	+42.8
O	TEC INC	6- 9	6 1/2	- 1/4	-3.7
N	TEKTRONIX INC	30- 53	35 1/2	+3 7/8	+12.2
N	TELEX	3- 6	3 1/2	- 1/8	-3.4
O	WANGCO INC	7- 13	8 3/8	+1 1/8	+15.5
O	WILTEK INC	6- 18	7 1/2	- 1/2	-6.2
	SUPPLIES & ACCESSORIES				
O	BALTIMORE BUS FORMS	5- 9	5 3/4	0	0.0
A	BARRY WRIGHT	6- 13	7 1/8	+ 1/2	+7.5
A	DATA DOCUMENTS	17- 22	17 3/8	+ 3/4	+4.5
O	DUPLEX PRODUCTS INC	7- 10	8 1/8	+ 3/8	+4.8
N	ENNIS BUS. FORMS	5- 8	5	- 1/8	-2.4
O	GRAHAM MAGNETICS	9- 20	11	+2	+22.2
O	GRAPHIC CONTROLS	8- 12	8 3/4	+ 3/4	+9.3
N	3M COMPANY	78- 89	83 1/4	+3 1/4	+4.0
O	MOORE CORP LTD	53- 60	56 1/2	+2 1/4	+4.1
N	NASHUA CORP	42- 58	49 1/2	+1 3/4	+3.6
O	REYNOLDS & REYNOLD	40- 51	43	+3	+7.5
O	STANDARD REGISTER	14- 20	15	+ 1/2	+3.4
O	TAB PRODUCTS CO	10- 23	9 1/2	0	0.0
N	UARCO	15- 23	17 1/4	+1 5/8	+10.3
A	WABASH MAGNETICS	5- 7	5 1/2	+ 1/4	+4.7
N	WALLACE BUS FORMS	15- 26	15 5/8	+ 3/8	+2.4
	COMPUTER SYSTEMS				
N	BURROUGHS CORP	211-245	224 3/8	+6	+2.7
N	COLLINS RADIO	16- 26	18	+1 1/2	+9.0
O	COMPUTER AUTOMATION	5- 16	10 3/8	+2	+23.8
N	CONTROL DATA CORP	31- 62	35 7/8	+4 1/4	+13.4
O	DATA GENERAL CORP	28- 46	35 1/2	+2 1/4	+6.7
O	DATAPOINT CORP	2- 6	2 3/4	+ 3/8	+15.7
O	DIGITAL COMP CONTROL	11- 21	11 1/4	- 1/2	-4.2
N	DIGITAL EQUIPMENT	73-105	85 1/2	+3 3/4	+4.5
N	ELECTRONIC ASSOC.	4- 9	5 3/8	+1 3/8	+34.3
A	ELECTRONIC ENGINEER.	6- 11	8	+ 3/4	+10.3
N	FOXBORO	23- 32	31 3/4	+3 5/8	+12.8
O	GENERAL AUTOMATION	22- 55	28 1/2	+3 1/2	+14.0
O	GRI COMPUTER CORP	1- 3	1 1/8	- 1/8	-10.0
N	HEWLETT-PACKARD CO	74- 95	80 3/8	+5 7/8	+7.8
N	HONEYWELL INC	98-139	109	+5 1/2	+5.3
N	IBM	299-340	313 3/4	+13 3/4	+4.5
O	INTERDATA INC	7- 13	8 1/4	+ 7/8	+11.8
N	MEMOREX	2- 19	TRADING	SUSPENDED	
O	MICRODATA CORP	2- 10	2 3/4	+1 1/8	+69.2
N	NCR	27- 37	35 1/8	+1	+2.9
N	RAYTHEON CO	22- 34	25 1/4	+3 1/4	+14.7
N	SINGER CO	45- 74	48	+2	+4.3
N	SPERRY RAND	36- 50	42 7/8	+2 5/8	+6.5
A	SYSTEMS ENG. LABS	3- 8	3 1/2	+ 1/2	+16.6
N	TEXAS INSTRUMENTS	83-101	91 1/4	+5 5/8	+6.5
O	ULTIMACC SYSTEMS INC	1- 11	4 1/2	- 1/2	-10.0
N	VARIAN ASSOCIATES	10- 20	11 1/4	+ 3/4	+7.1
N	WANG LABS.	13- 34	15 3/4	+1 5/8	+11.5
N	XEROX CORP	141-169	152 3/8	+2 5/8	+1.7
	LEASING COMPANIES				
A	BOOTHE COMPUTER	1- 5	1 5/8	- 1/8	-7.1
O	BRESNAHAN COMP.	1- 2	2 1/8	0	0.0
O	COMDISCO INC	6- 17	7 1/8	+ 7/8	+14.0
O	COMMERCE GROUP CORP	3- 4	3 5/8	+ 1/8	+3.5
O	COMPUTER EXCHANGE	1- 1	1/2	0	0.0
A	COMPUTER INVSTRS GRP	2- 8	2 3/4	+1	+57.1
O	COMP. INSTALLATIONS	1- 2	1	0	0.0
M	DATRONIC RENTAL	2- 3	2 1/4	0	0.0
A	DCL INC	1- 3	1 1/8	- 1/4	-18.1
A	DEARBORN-STORM	12- 26	15 1/2	-1 1/2	-8.8
A	DPA, INC.	5- 8	4 7/8	+ 1/4	+5.4
N	DPF INC	5- 9	7	0	0.0
O	EDP RESOURCES	1- 3	1 1/2	0	0.0
A	GRANITE MGT	2- 6	3 3/8	0	0.0
A	GREYHOUND COMPUTER	3- 6	4 3/8	0	0.0
A	ITEL	4- 12	5	- 3/8	-6.9
N	LEASCO CORP	8- 18	9 7/8	+ 3/8	+3.9
O	LEASPAC CORP	2- 8	2 7/8	- 1/4	-8.0
O	LECTRO MGT INC	1- 2	1 1/4	0	0.0
O	NHG INC	6- 15	6 1/4	- 1/8	-1.9
A	ROCKWOOD COMPUTER	1- 3	1 1/4	+ 1/8	+11.1
N	U.S. LEASING	16- 36	17 3/8	+1 1/4	+7.7

EXCH: N=NEW YORK; A=AMERICAN; P=PHIL-BALT-WASH
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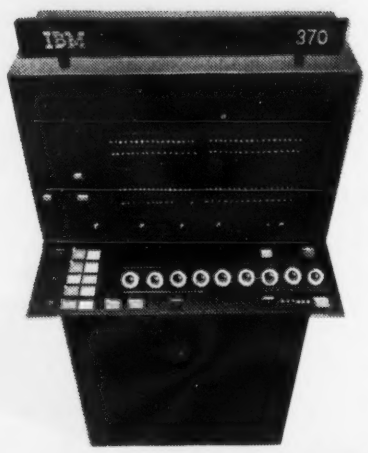

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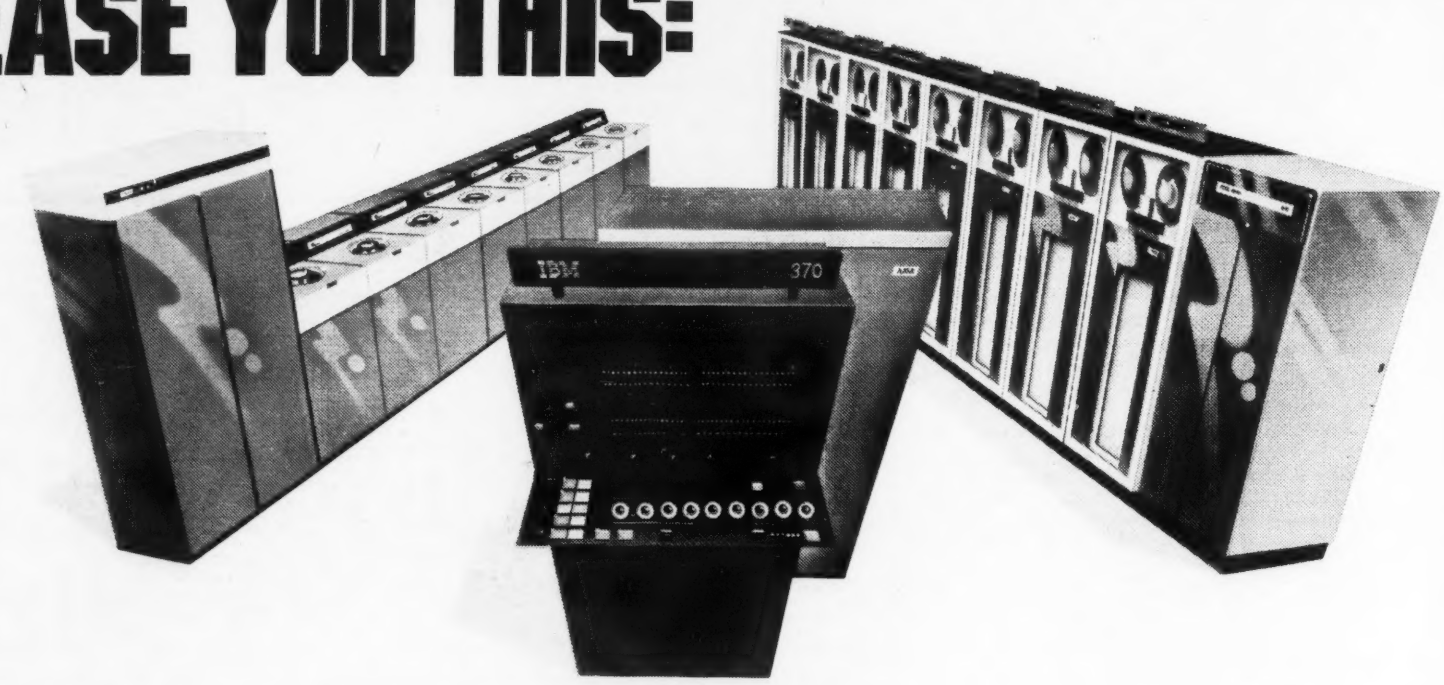

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